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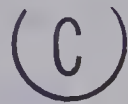
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A LONGITUDINAL STUDY OF ADMINISTRATIVE RATIOS IN
THE EDMONTON PUBLIC SCHOOL DISTRICT

by



RAY ARTHUR DUBOYCE

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled " A Longitudinal Study of Administrative Ratios in the Edmonton Public School District" submitted by Ray Arthur Duboyce in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT

The purpose of this study was to examine the growth of the administrative, auxiliary, and support components of the Edmonton Public School District from 1944 to 1969. The total numbers of schools, pupils, teachers, principals, and central office staff in this school district were compiled for the past twenty-five years. A series of ratios were calculated comparing the size of thirteen components to various measures of size of the total school district.

The central office staff was divided into administrative, auxiliary, and support components. The central office administrative staff was in turn subdivided into senior, intermediate, supervisory, and service components. The central office auxiliary staff was subdivided into those primarily concerned with pupils and those primarily concerned with teachers. The total administrative component was defined as the total number of central office administrative staff plus the total number of school principals. Some of the thirteen components were combinations of the above units.

The size of the Edmonton Public School District was defined by the total numbers of (1) schools, (2) pupils, (3) teachers, (4) teachers plus principals, and (5) total professional staff.

The ratios calculated for the growth of the central

office administrative staff, central office auxiliary staff, central office support staff, and total central office staff indicated that all of the above components tended to grow at a faster rate than the various measures of district size. Both divisions of the central office auxiliary staff have grown faster than the school district over the past twenty-five years.

The ratios showing the comparative growth of the senior and supervisory divisions of the central office administrative staff both decreased over the past twenty-five years. The central office service administrative staff increased in proportion to the growth of the entire school district. The ratios depicting the growth of the central office intermediate administrative staff indicate an irregular pattern of development.

The ratios calculated to illustrate the comparative rate of growth of the administrative component (central office administrative staff plus principals) and the growth of the school district, as measured by the numbers of teachers, teachers plus principals, and total professional staff indicated a cyclic pattern of development. From 1944 to 1948 the administrative component expanded in relation to the growth of the total school district. The period from 1948 to 1966 showed a proportional decrease in the administrative component. After 1966 there has been, once again, a relative increase in the numbers of administrators.

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Chapter 1

THE PROBLEM AND DEFINITION OF TERMS

Introduction

The substantial population growth in Canada between 1944 and 1969, in addition to the mounting emphasis on formal learning, has resulted in the phenomenal expansion of many educational organizations. Blowers (1969:1) referred to this rapid expansion of formal educational institutions in his study of Western Canadian school districts.

With increased urbanization and consolidation of districts, the individual school and the individual system, have grown bigger and fewer in number, while at the same time, public enrolment below college level has progressively increased.

In referring to his biological models for organizations, Haire (1959:272) points out that there has been a distinct lack of empirical data in regard to organizational growth.

Most organizational theorists are in agreement with Blau and Scott (1962:225) who maintain that "structural growth by its very nature involves increasing complexity." In relation to this same subject Boulding (1953:326) stated:

Finally we have what might be called structural growth, in which the aggregate which "grows" consists of a complex structure of interrelated parts and in which the growth process involves change in the relation of the parts.

One of the components which has caused the most

interest among those studying organizational growth has been the administrative element. According to Starbuck (1965:495), ". . . the central interest is in what actually happens to administrative structure as organizational size and age increase. . . ."

The actual effect of an organization's growth on its administrative component has long been a matter of speculation. Parkinson (1957:21), while studying this question of organizational growth, noted that from 1914 to 1928 the British Navy decreased in total numbers by some thirty-one percent, while the admiralty officials increased by about seventy-eight percent during the same period of time. He concluded that administrative growth takes place irrespective of organizational changes. Some authors (Entwistle and Walton, 1961:22-23; Indik, 1964:7) have recognized the fact that as organizations grow, intra-group relationships multiply and administrative tasks become more difficult. On the basis of the above observations, the conclusion can be reached that the interrelated growth of organizations with their components represents a highly complicated and neglected field of study.

In his examination of school districts in Western Canada, Blowers (1969:156) concluded that larger school districts employed a proportionally smaller number of administrators than did smaller school districts. These findings supported those of Gill's (1967:50) study which had concluded that ". . . the proportion of administrative staff

in a school system decreases as the size of the system increases." A third study conducted at the University of Alberta by Vithayathil (1969:106) also concluded ". . . that administrative ratios in school systems decreased as system size increased." These three studies examined administrative ratios primarily from a cross-sectional point of view. The studies were not primarily concerned with organizational growth; it was, however, the intention of the three authors (Gill, 1967; Vithayathil, 1969; Blowers, 1969) to compare the administrative components in school districts of varying sizes. The findings of these three authors were in direct contradiction to those arrived at by Terrien and Mills (1955:13), whose research, conducted in various California School Districts, indicated that a direct relationship existed between the growth of the administrative component and the growth of the whole school district. Caplow (1957:502) maintains that "there is an almost universal belief that administrative and overhead components of any organization increase out of proportion to increase in its size."

With the exceptions of the Caplow (1957) and Blowers (1969) studies, the research findings mentioned above were based entirely upon cross-sectional data. There is a recognized need for longitudinal data in this area of research. Cross-sectional studies, according to Starbuck (1965:520):

At best, require very large samples to establish

statistical significance, and at worst, they produce spurious correlations due to systematic but unobserved differences among organizations.

1. THE PROBLEM

Statement of the Problem

This study was a longitudinal continuation of the three studies (Gill, 1967; Blowers, 1969; Vithayathil, 1969) previously carried out at the University of Alberta in this same area of research. Instead of employing cross-sectional techniques, this study examined the growth of a single school district, the Edmonton Public School District (hereinafter referred to as the EPSD or the district), over a twenty-five year period, from the school year 1944-45 to 1969-70.

This study examined the growth patterns of various components of the district in relation to the growth of the total EPSD. The central office staff of the district was divided into three basic categories:

1. The Central Office Administrative Staff (COAd)--all those who perform administrative functions in the district's central office.
2. The Central Office Auxiliary Staff (COAx)--all those who work directly with students or instructional matters.
3. The Central Office Support Staff (COS)--all those who perform clerical, secretarial, or custodial functions.

Data for the above classifications were collected and compared to various measures of growth (schools, pupils,

teachers, and teachers plus principals) of the entire EPSD. Sub-classifications of the central office administrative staff and of the central office auxiliary staff were made and subsequently compared to the expansion of the whole district. This study was designed as a descriptive examination of the interrelated growth of the district and selected components.

Subproblems. The main problem was divided into a number of subproblems by calculating ratios showing the growth of some of the district's components over the past quarter century. Each separate measure of district size in the (a) part of the subproblems, has been individually compared to the total component in each (b) part.

What changes have occurred in the relationship between the following variables during the period 1944 to 1969?

1. (a) the numbers of schools, pupils, teachers, teachers plus principals, total professional staff, and total central office staff, and (b) the proportion of the district's employees engaged as central office administrative staff.
2. (a) the numbers of schools, pupils, teachers, teachers plus principals, total professional staff, and total central office staff, and (b) the proportion of the district's employees engaged as central office auxiliary staff.
3. (a) the numbers of schools, pupils, teachers, teachers plus principals, total professional staff, and total central office staff, and (b) the proportion of the

district's employees engaged as central office administrative and auxiliary staff.

4. (a) the numbers of schools, pupils, teachers, teachers plus principals, total professional staff, and total central office staff, and (b) the proportion of the district's employees engaged as central office support staff.

5. (a) the numbers of schools, pupils, teachers, teachers plus principals, and total professional staff, and (b) the proportion of the district's employees engaged as central office staff.

6. (a) the numbers of schools, pupils, teachers, teachers plus principals, and total professional staff, and (b) the proportion of the district's employees engaged as central office administrative staff plus principals.

7. (a) the numbers of schools, pupils, teachers, teachers plus principals, and total professional staff, and (b) the proportion of the district's employees engaged as central office administrative and auxiliary staff plus principals.

8. (a) the numbers of schools, pupils, teachers plus principals, central office administrative staff, central office auxiliary staff, and total central office staff and (b) the proportion of the district's employees engaged as central office senior administrative staff.

9. (a) the numbers of schools, pupils, teachers plus principals, central office administrative staff, central office auxiliary staff, and total central office staff, and

(b) the proportion of the district's employees engaged as central office intermediate administrative staff.

10. (a) the numbers of schools, pupils, teachers plus principals, central office administrative staff, central office auxiliary staff, and total central office staff and (b) the proportion of the district's employees engaged as central office supervisory administrative staff.

11. (a) the numbers of schools, pupils, teachers plus principals, central office administrative staff, central office auxiliary staff, and total central office staff, and (b) the proportion of the district's employees engaged as central office service administrative staff.

12. (a) the numbers of schools, pupils, teachers plus principals, central office administrative staff, central office auxiliary staff, and total central office staff, and (b) the proportion of the district's employees engaged as central office auxiliary staff who are primarily concerned with teachers.

Justification of the Study

Up to the present time, nearly all research data relating to organizational growth has been the product of cross-sectional studies. Many longitudinal assumptions have been made on the basis of cross-sectional data. Starbuck (1965:519) describes this tendency as being all too common among the social sciences.

A single district was selected to be studied over a twenty-five year period. A detailed longitudinal study

of a single school district was made in an attempt to better identify the growth patterns of the educational organization and its various components.

Information provided by this study might well be of service to the district in planning for future organizational expansion at various levels. Organizational growth has often been of prime concern to those involved with the financial aspects of education. Tosi and Patt (1967:162) pointed out that "the complete question of administrative unit size is important from a cost standpoint."

As indicated earlier, very little is really known about the structure and growth of organizations in general, and of educational organizations in particular. Several authors (Haas, Hall, and Johnson, 1967:912; Starbuck, 1965: 519) have pointed out the need for more longitudinal studies in the area of organizational growth. In summing up his own study, Blowers (1969:161) makes the point that longitudinal case studies of several large school systems are important in order ". . . that this might provide the total growth curve of several school systems from their inception to the present."

Of the studies done relating to organizational growth, few have been concerned with educational organizations. Only six of the studies reviewed in Chapter 2 were directly related to educational organizations and only three (Gill, 1967; Blowers, 1969; Vithayathil, 1969) were concerned with school districts in Canada. Of the three

referred to above only the Blowers study employed longitudinal procedures. Three American studies relating to growth of educational organizations (Terrien and Mills, 1955; Hawley, 1965; Gittell, 1968) are also reviewed in Chapter 2. Of these latter three studies, only the one by Gittell used a longitudinal approach. Much confusion and contradiction exists among the findings of these six studies. The three studies carried out at the University of Alberta in this area of research have provided a foundation upon which future studies may be based. By providing a detailed analysis of a single school district, this foundation hopefully will be further strengthened.

2. DEFINITION OF TERMS

Factors Considered in the Establishment of a Definition of Administrative Staff

Sears (1950:31) listed five different sorts of activities characteristic of the administrative process: planning, organizing, directing, coordinating, and controlling. Those who perform any of the above functions in an official capacity might be considered administrators.

Indik (1964:302) isolated "direct interpersonal supervision" and "organizational decision-making" as the two main functions of administrators. He excludes from the administrative category any who are involved directly with the production aspects of the organization.

The Terrien and Mills (1955:12) study included

superintendents, their assistants as well as their immediate staff, principals, and business managers as the administrative component of a school organization. Other personnel, such as ". . . teachers, nurses, custodians, cafeteria workers and the like, . . ." were excluded from the administrative category.

Harris (1963:7-11) used the directness of relationship to pupils and instructional matters to separate administrative staff from non-administrative staff. The inclusion of those who are not directly concerned with the functions relating to pupils and instruction will further supplement the categories established by Sears (1950) and Indik (1964).

Blowers (1969:10) excluded from his administrative component people working out of the central office such as "guidance officers, visiting teachers, reading clinicians, and speech therapists. . . ." These people were labelled as auxiliary staff in this study.

Campbell et al. (1966:96, 133) indicate that the administrative component of a school district should also include those concerned with business management, building, and various maintenance departments. According to them, administrative tasks include all of the following areas: school-community relations, curriculum development, staff personnel, pupil personnel, physical facilities, finance and business management, and organization and structure.

Administrative Functions

According to the authors cited above, educational

administration involves the following functions: (a) planning, directing, coordinating, and/or controlling the activities and personnel of a school district; (b) making key organizational decisions; (c) supervising the work of other personnel; (d) not working directly with pupils or their instruction.

Total Central Office Administrative Staff

The total central office administrative staff includes all those who perform the above administrative functions in the district's central office. In order to make a more detailed analysis of the central office administrative staff, the following sub-categories were used:

1. Central Office Senior Administrative Staff.

The central office senior administrative staff consists of the superintendent, deputy superintendent, associate superintendents, assistant superintendents, and secretary-treasurer.

2. Central Office Intermediate Administrative Staff.

The central office intermediate administrative staff refers to all the directors, assistant directors, assistant secretary-treasurers, administrative assistants, and personnel officers.

3. Central Office Supervisory Administrative Staff.

The central office supervisory administrative staff consists of all the supervisors, assistant supervisors, and coordinators.

4. Central Office Service Administrative Staff.

The central office service administrative staff refers to all personnel such as purchase planners, requisition controllers, and equipment technologists. Also included in this category are all directors, assistant directors, supervisors, and assistant supervisors who are primarily concerned with building and maintenance.

Administrative Component

The total administrative component of the district, for the purpose of this study, was defined as the total central office administrative staff plus the total numbers of school principals. The decision to exclude vice-principals and other minor administrative officials below the office of principal was made because of the difficulty in obtaining accurate figures and job descriptions over the past twenty-five years. Gill maintained that "school systems, when asked to name the officers of their administrative staffs, made little mention of any office below that of principal."

Central Auxiliary Staff

The central office auxiliary staff consists of all those working directly with pupils or instructional matters. In order to make a more detailed analysis of the central office auxiliary staff, the following sub-categories were used:

1. Central Office Auxiliary Staff Concerned with Pupils.

The central office auxiliary staff concerned with pupils consists of all psychologists, social workers, speech

therapists, remedial clinicians, and attendance officers in the district.

2. Central Office Auxiliary Staff Concerned with Teachers.

The central office auxiliary staff concerned with teachers refers to all subject consultants in the district.

Central Office Support Staff

The central office support staff consists of all those who perform clerical, secretarial or custodial duties.

Total Central Office Staff

The total central office staff includes all administrative, auxiliary, and support personnel.

Total Professional Staff

The total professional staff consists of all the teachers, principals, central office administrative staff, and central office auxiliary staff.

Size of School District

The size of the school district was defined in a number of ways by using the following measures:

1. The total numbers of schools,
2. The total numbers of pupils,
3. The total numbers of teachers,
4. The total numbers of teachers plus principals,
5. The total numbers of professional staff, and
6. The total numbers of central office staff.

Administrative and/or Auxiliary Ratios

The administrative and/or auxiliary ratios presented in Chapter 4 are derived in the following way:

$$\frac{\text{total numbers of administrative and/or auxiliary staff}}{\text{size of district.}}$$

The School Year

Whenever a particular year is mentioned, the reference is intended to mean the whole school year. For example, when 1969 is written it refers to the school year of 1969-1970.

3. ORGANIZATION OF THE STUDY

Chapter 1 describes this study as a longitudinal analysis of the growth of a single school district. The main problem was divided into thirteen subproblems. The definitions of terms used throughout the study were also presented in this chapter.

Chapter 2 contains a review of the literature related to the study of how organizations and their components grow.

Chapter 3 presents the various research procedures, data collection methods, and statistical techniques, as well as the basic data in both tabular and graphic form.

Chapter 4 describes the growth of the district through a series of ratios which compare the expansion of the total district to that of selected components.

The conclusions, implications, and recommendations for future studies are contained in Chapter 5.

Chapter 2

REVIEW OF LITERATURE

The relationship between the growth of an organization and the growth of its components represents a relatively new field in the realm of educational research. Organizational growth, according to Litterer (1965:397), is one of the least developed areas in the study of organizations.

Organizational Growth and Change

Chandler (1962:8) points out that organizations are often thought of as having a life of their own, which may exceed in length the lives of their human members. Ginzberg and Reilley (1957:62) maintain that organizational change and growth are often the product of dissatisfaction expressed by subordinates. Subsequent changes are brought about as a result of critical reassessment of organizational structure by management with a view to alleviating worker discontent. Sears (1950:47) sees organizational growth as the end product of a constant battle between those who demand greater innovation and those who cling to the status quo. Carzo and Yanouzas (1967:500) view the organization as an organism that will fight to maintain internal stability at all costs. Argyris (1960:117), like Carzo and Yanouzas, states that ". . . organizations are a pattern of variables tending

toward stability."

Newman (1950:280-281), in discussing organizational structure, indicates that departmentalization appears to be a definite pattern in the growth and development of organizations. Litterer (1965:403) insists that the growth of an organization will invariably produce a high degree of complexity and thus a greater amount of coordination will be required. He argues that various organizational tasks always fall to coordinating units in order to obtain optimum efficiency. Starbuck (1965:482) has arranged several models of organizational growth along a continuum and divided them into four groups:

(a) Cell-division models and (b) metamorphosis models focus on patterns in the size and structure of the organization as it expands. (c) Will o' the wisp and (d) decision-process models focus on the mechanisms internal to the organization by which growth is affected.

The cell-division model explains growth as a percentage change in size. The metamorphosis model, according to Starbuck (1965:486), ". . . is marked by abrupt and discrete changes in the conditions for organizational persistence and in the structure appropriate to these conditions." The will o' the wisp model sees growth in organizations occurring as a result of pursuing certain objectives which disappear after expansion has been completed. The decision-process model attempts to reproduce the essential parts of organizational decisions in order to examine growth.

There is an unquestionable lack of research studies relating to the growth of organizations. Mouzelis (1967:179)

points out that longitudinal studies are particularly rare in this area of organizational research.

Administrative Growth

Several authors (Boulding, 1953:329; Haire, 1959:273; Litterer, 1965:430) have suggested that as organizations grow, their structures, particularly their administrative structures, undergo considerable change. Parkinson (1957:20-21) strongly adheres to the principle that the administrative portion of any organization continues to expand regardless of the organization's total growth pattern. Blau and Scott (1962:226) insist that this view has been universally accepted:

It is widely assumed that large organizations tend to be over-bureaucratized, that is, that an increase in organizational size is accompanied by a disproportionate increase in administrative overhead;

According to Tosi and Patt (1967:161), the evidence relating to this question of administrative components does not tend to support this commonly accepted assumption. Blau and Scott (1962:226), like Tosi and Patt, point out that although overbureaucratization of organizations is often assumed to be the case, research findings would seem to prove otherwise.

Industrial Studies

In a longitudinal study of American industries conducted by Melman (1951:62-112) an inverse relationship was discovered between the size of organizations and their administrative components. A study of German industries carried out into the 1930's by Bendix (1956:221-222)

produced results closely approximating those of the Melman (1951) study. After reviewing a number of such findings, Blau and Scott (1962:227) concluded that the size of the administrative component does not necessarily increase with organizational growth and that a negative relationship may exist between the two. Haire (1959:296) lent support to this theory by concluding, on the basis of his research, that in larger industrial organizations, management forms a proportionally smaller part of the working force than in smaller industrial firms. Table 1, which is extracted from Haire's work, illustrates this negative relationship quite clearly.

Hospital Studies

Anderson and Warkov (1961:26-27), using American hospitals, also examined administrative growth. Their research findings show quite clearly that the larger the institution the smaller the proportion of its employees engaged in administrative activities. A similar research project conducted by Tosi and Patt (1967:168), in thirty-six United States Army hospitals, found an inverse relationship between organizational size and administrative growth.

Studies of other Non-educational Organizations

Haas, Hall, and Johnson (1963:12-17) conducted a study of thirty different organizations in which they separated "supportive" personnel from "directive" personnel; subsequent findings indicated that the supportive component

Table 1

Top and Middle Management as a Percent of Total^a

| Number of Employees | Percent of Total in Top and Middle Management |
|------------------------|--|
| 20-50 | 13.6 |
| 50-100 | 10.5 |
| 100-200 | 5.9 |
| over 200 | 4.1 |

^aThis table is taken from Growth of Organizations by Haire (1959:296).

of these organizations became increasingly smaller as the size of the various firms increased. In a study of manufacturing industries in Ohio, Baker and Davis (1954:14-15) found no relation between the size of organization and proportion of administrators. Wilensky (1956:200-201) suggested that the administrative component of labor unions increases on a proportional basis with the growth of the unions. Looking at this same situation from the subordinate's point of view rather than from that of the superordinate, Caplow (1957:502) defends Parkinson's theory:

There are remarkably few studies bearing directly on this point, however. Most of the evidence for this hypothesis is indirect. It consists of case studies of particular plants, and the observation that the proportion of productive workers has steadily declined whereas the average size of the establishment has risen.

Table 2, which shows Caplow's findings, illustrates the marked decrease of personnel engaged directly in production over the fifty-three year period analysed. Indik (1965:301-309) after studying the relationship between organizational size and the supervision ratio in five separate organizations, insisted that the two are in inverse proportion to one another.

Educational Studies

Few studies have examined this question of administrative growth from an educational perspective. The research conducted by Terrien and Mills (1955:11-13) in a number of school districts in California in the 1950's found ". . . that the larger the size of the containing organization

Table 2
Percent of Workers Directly Engaged in Production^a

| Year | Percent of Workers |
|------|--------------------|
| 1899 | 93 |
| 1909 | 89 |
| 1919 | 86 |
| 1929 | 87 |
| 1939 | 82 |
| 1949 | 80 |
| 1952 | 79 |

^aThis table is taken from a study done by Theodore Caplow (1957:503).

the greater will be the proportion given over to its administrative component." Table 3 reviews the statistical findings of the Terrien and Mills (1955) study.

Gittell (1968:53-55) conducted a longitudinal study of the school districts of New York, Chicago, Detroit, St. Louis, Baltimore, and Philadelphia. Her research, conducted over a ten-year period, indicated almost no change in the administrative components of four of the cities. However, New York City's School System showed a doubling of the administrative proportion, while Detroit showed an administrative increase of about one-third over this ten-year period.

A study conducted by Hawley (1965:252-255) in colleges and universities in the United States produced results very different from those arrived at in the two studies cited above. Using some 116 institutions of higher learning, Hawley discovered that as the teaching faculty grew, the proportional numbers of administrators decreased.

Additional information on this complex problem has resulted from three research studies done at the University of Alberta. The first of these, conducted by Gill (1967:50), was a cross-sectional study of some thirty-eight urban school districts in Western Canada. After analysing his data, Gill concluded that the ". . . larger systems tended to have proportionally smaller administrative staffs than smaller systems." Table 3 also illustrates some of his statistical findings concerning the administrative components

Table 3

Comparison of Mean Percentages of Staff in Administrative Positions in Groups of California School Systems, and Western Canadian School Systems of Different Sizes

| | Group | Number in group | No. of Prof. Employees | Admin. component- mean percentage | Standard deviation |
|--------------------------------------|--------|--------------------|------------------------------|--|-----------------------|
| Terrien and Mills ^a | small | 31 | 13-249 | 13.7 | 3.7 |
| | medium | 27 | 250-999 | 14.3 | 2.5 |
| | large | 10 | 1000-4620 | 15.6 | 1.7 |
| Gill ^b | small | 18 | 47-248 | 10.7 | 2.3 |
| | medium | 12 | 252-761 | 8.6 | 1.2 |
| | large | 7 | 1026-3099 | 6.7 | 1.3 |
| Blowers ^c | small | 16 | 56-185 | 9.61 | 2.49 |
| | medium | 13 | 267-616 | 8.57 | 2.33 |
| | large | 12 | 904-3700 | 6.88 | 1.55 |

^aObtained from Terrien and Mills (1955:13).

^bObtained from Gill (1967:46).

^cObtained from Blowers (1969:69).

of the various school systems.

A subsequent cross-sectional study conducted by Vithayathil (1969) in Alberta, produced findings very similar to those of Gill. As a result of his study, which incorporated 108 school districts in Alberta, Vithayathil (1969:106) concluded ". . . that administrative ratios in school systems decreased as system size increased."

Blowers (1969) carried out a longitudinal and cross-sectional follow-up to the study done by Gill (1967). He examined forty-one urban school districts in Western Canada over a five-year period from 1964-65 to 1968-69. Blowers (1969:158) states that his results ". . . probably provide supportive evidence for Gill's (1967) study and non-supportive evidence for Terrien and Mills' (1955) study." Table 3 presents some of the findings from the Blowers (1969) study. From a longitudinal point of view, his research was not at all conclusive in that these school districts were studied over such a short period of time. Although the administrative ratios for some districts decreased over the five-year period, the ratios in other cases stayed constant, increased, or varied irregularly.

Summary of Chapter 2

The material reviewed here relating to organizational growth and change is highly speculative in nature. The present study re-examined this question of organizational growth and change from the point of view of a single school district over a twenty-five year period.

A number of industrial studies have examined this question of organizational growth and its relationship to administrative expansion. Bendix (1956), Melman (1951), and Haire (1959) seem to be in agreement as to the negative relationship between the administrative proportion and the size of the industrial organization as a whole.

Hospital studies conducted by Anderson and Warkov (1961) and by Tosi and Patt (1967) also indicate an inverse relationship between organizational size and administrative proportions.

Additional studies carried out in various non-educational organizations produced very diverse findings. The studies by Haas, Hall, and Johnson (1963), Wilensky (1956), and Caplow (1957) all suggest that larger organizations tend to have a greater proportion of employees engaged in administration than do smaller organizations. The research carried out by Indik (1965), however, indicated that an inverse relationship exists between the size of the administrative component and the size of the whole organization.

In their examination of a number of school districts, Terrien and Mills (1955) found the administrative components of larger school districts to be proportionally larger than those of smaller school districts. Gittell's (1968) longitudinal research tended to support the conclusions reached by Terrien and Mills (1955). On the other hand, research carried out by Hawley (1965), Gill (1967),

Vithayathil (1969), and Blowers (1969) in this same area of research indicated that larger educational organizations tended to use a proportionally smaller number of administrators than did smaller educational organizations.

The consensus of opinion seems to be that the ratio of administrative staff in an organization decreases as the organization grows. The purpose of this research was to examine this hypothesis by studying the development of a single school district over a twenty-five year period.

Chapter 3

METHODOLOGY AND DESCRIPTION OF SCHOOL DISTRICT

This study was designed as a longitudinal analysis of a single school district. The school district being studied, the Edmonton Public School District, is described in this chapter. In addition, the assumptions, limitations, delimitations, research procedures, and methods used for the collection of data are presented in this chapter. The numbers of schools, pupils, teachers, principals, and central office staff are also presented in both tabular and graphic form.

Description of the School District

This study was a longitudinal follow-up to the cross-sectional studies conducted at the University of Alberta by Gill (1967) and Vithayathil (1969) as well as an extension of the five-year longitudinal study carried out by Blowers (1969) in this same subject area.

In order to study the growth patterns of an educational organization, selection of an expanding school district was necessary. The EPSD has grown rapidly over the past twenty-five years. Most of this growth can be attributed to the substantial population increases in the city of Edmonton over the past quarter century. Edmonton's

population in 1944 was 110,000 and in 1969 was 422,000. Expansion of the district also took place as a result of amalgamations with the neighbouring school districts of Beverley in 1961 and Jasper Place in 1964.

The EPSD operates as an independent school district, responsible for the hiring of its own superintendent and central office staff. The hiring of educational personnel has naturally been affected by the prevailing fiscal policy in the field of education established by the Provincial Government of Alberta. The responsibility for the rate of growth of the various administrative and auxiliary components, however, was largely in the hands of the district.

This examination of the extensive growth of the district from 1944 to the present day provides a description of how one single educational organization has expanded in relation to its components.

Assumptions

The basic assumption underlying this study was that the figures made available by the district were accurate. It was also assumed that the various job descriptions of the central office administrative and auxiliary staff obtained through records and personal interviews were accurate and consistent over time.

Limitations

Some of the district's records have been lost or destroyed over the years and consequently a few figures

desirable for this study were unavailable. On the basis of figures for previous years and subsequent years estimates of the missing numbers were made. Wherever possible, figures were obtained for the October-November period of each school year.

Delimitations

This study and its various results were considered to be of a purely descriptive nature. The figures and subsequent growth patterns derived in this study represent only the EPSD. No attempt whatsoever has been made to generalize these findings to any other district.

Collection of the Data

A detailed examination of personnel files, payroll records, superintendent reports, and secretary-treasurer reports provided most of the necessary data. From the above sources, the numbers of schools, pupils, teachers, principals, and central office staff in the district for each of the past twenty-five years were collected. An examination of school board minutes was also helpful in determining various job descriptions.

PRESENTATION OF THE DATA

All of the raw data collected from the district are described in the remainder of this chapter. In addition to the tabular presentation of these data, various graphic descriptions of the district's figures are also made. All

subsequent categorizations of the district's personnel were made on the basis of definitions established in Chapter 1.

Description of the Basic Data from the District

The data collected from the district representing each of the last twenty-five school years were divided into eighteen separate categories. The figures for each of these categories are presented in Table 4.

Variable 1: schools. The total numbers of schools.

Variable 2: pupils. The total numbers of pupils.

Variable 3: teachers. The total numbers of teachers.

Variable 4: teachers plus principals. The total numbers of teachers plus principals.

Variable 5: COAd. The total numbers of central office administrative staff.

Variable 6: COAx. The total numbers of central office auxiliary staff.

Variable 7: COS. The total numbers of central office support staff.

Variable 8: total professional staff. The total numbers of teachers, principals, central office administrative staff, and central office auxiliary staff.

Variable 9: COAd plus COAx. The total numbers of

Table 4

Yearly Numbers of Schools, Pupils, Teachers,
Principals, and Central Office Staff

| Variable Number | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------|---------|--------|----------|--------------------------|------|------|
| Year | schools | pupils | teachers | teachers + principals | COAd | COAx |
| 1969 | 142 | 73787 | 3559 | 3701 | 121 | 56 |
| 1968 | 138 | 71827 | 3234 | 3372 | 99 | 51 |
| 1967 | 130 | 68973 | 3024 | 3154 | 96 | 34 |
| 1966 | 126 | 67036 | 2779 | 2905 | 65 | 28 |
| 1965 | 118 | 64541 | 2566 | 2684 | 58 | 24 |
| 1964 | 117 | 62019 | 2041 | 2158 | 38 | 14 |
| 1963 | 98 | 51353 | 1893 | 1991 | 34 | 14 |
| 1962 | 95 | 49426 | 1812 | 1907 | 34 | 14 |
| 1961 | 90 | 46120 | 1652 | 1742 | 34 | 13 |
| 1960 | 85 | 43488 | 1581 | 1666 | 34 | 12 |
| 1959 | 81 | 41065 | 1402 | 1483 | 30 | 7 |
| 1958 | 78 | 38775 | 1257 | 1335 | 30 | 7 |
| 1957 | 71 | 36152 | 1131 | 1202 | 32 | 5 |
| 1956 | 69 | 33300 | 993 | 1062 | 31 | 6 |
| 1955 | 64 | 30741 | 908 | 972 | 24 | 5 |
| 1954 | 60 | 28225 | 795 | 855 | 22 | 2 |
| 1953 | 55 | 25572 | 705 | 760 | 20 | 2 |
| 1952 | 51 | 22924 | 602 | 671 | 19 | 2 |
| 1951 | 47 | 20737 | 562 | 609 | 18 | 2 |
| 1950 | 44 | 19404 | 525 | 569 | 17 | 1 |
| 1949 | 43 | 17982 | 478 | 521 | 14 | 1 |
| 1948 | 37 | 16545 | 439 | 476 | 15 | 1 |
| 1947 | 33 | 15768 | 420 | 453 | 11* | 1 |
| 1946 | 32 | 15474 | 403 | 435 | 9 | 1 |
| 1945 | 26 | 15361 | 402 | 428 | 9 | 1 |
| 1944 | 23 | 14852 | 394 | 417 | 9 | 1 |

*estimated figure

continued

Table 4 (continued)

| Variable Number | 7 | 8 | 9 | 10 | 11 |
|--------------------|-----|-------------------------|----------------|----------------------|-------------------------------|
| Year | COS | total prof. staff | COAd + COAx | COAd + principals | total central office staff |
| 1969 | 200 | 3878 | 177 | 263 | 377 |
| 1968 | 182 | 3522 | 150 | 237 | 332 |
| 1967 | 172 | 3284 | 130 | 226 | 302 |
| 1966 | 109 | 2998 | 93 | 191 | 202 |
| 1965 | 86 | 2766 | 82 | 176 | 168 |
| 1964 | 68 | 2210 | 52 | 155 | 120 |
| 1963 | 55 | 2039 | 48 | 132 | 104 |
| 1962 | 65 | 1955 | 48 | 129 | 114 |
| 1961 | 57 | 1789 | 47 | 124 | 104 |
| 1960 | 56 | 1712 | 46 | 119 | 102 |
| 1959 | 55 | 1520 | 37 | 111 | 92 |
| 1958 | 51 | 1372 | 37 | 108 | 88 |
| 1957 | 37 | 1239 | 37 | 103 | 74 |
| 1956 | 31 | 1099 | 37 | 100 | 68 |
| 1955 | 26 | 1001 | 29 | 88 | 55 |
| 1954 | 27 | 879 | 24 | 82 | 51 |
| 1953 | 22 | 782 | 22 | 75 | 44 |
| 1952 | 17 | 692 | 21 | 70 | 38 |
| 1951 | 15 | 629 | 20 | 65 | 35 |
| 1950 | 18 | 587 | 18 | 61 | 36 |
| 1949 | 16 | 536 | 15 | 57 | 31 |
| 1948 | 10 | 492 | 16 | 52 | 26 |
| 1947 | 10 | 465 | 12 | 44 | 22* |
| 1946 | 9 | 445 | 10 | 42 | 19 |
| 1945 | 6 | 438 | 10 | 35 | 16 |
| 1944 | 5 | 427 | 10 | 32 | 15 |

*estimated figure

continued

Table 4 (continued)

| Variable Number | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|--------------------|--------------------------------|----------------|----------------|----------------|-----------------|-------|-------|
| Year | COAd + COAx + principals | Senior COAd | Inter. COAd | Super. COAd | Service COAd | COAxP | COAxT |
| 1969 | 319 | 10 | 28 | 34 | 49 | 38 | 18 |
| 1968 | 288 | 10 | 20 | 29 | 40 | 35 | 16 |
| 1967 | 260 | 11 | 19 | 26 | 40 | 28 | 6 |
| 1966 | 219 | 7 | 14 | 24 | 20 | 23 | 5 |
| 1965 | 200 | 7 | 12 | 21 | 18 | 20 | 4 |
| 1964 | 167 | 6 | 9 | 14 | 9 | 11 | 3 |
| 1963 | 146 | 5 | 5 | 14 | 10 | 10 | 4 |
| 1962 | 143 | 5 | 5 | 14 | 10 | 10 | 4 |
| 1961 | 137 | 5 | 5 | 14 | 10 | 10 | 3 |
| 1960 | 131 | 5 | 5 | 14 | 10 | 8 | 4 |
| 1959 | 118 | 5 | 2 | 12 | 11 | 6 | 1 |
| 1958 | 115 | 5 | 2 | 12 | 11 | 5 | 2 |
| 1957 | 108 | 5 | 4 | 12 | 11 | 4 | 1 |
| 1956 | 106 | 5 | 3 | 12 | 11 | 4 | 2 |
| 1955 | 93 | 5 | 4 | 11 | 5 | 5 | - |
| 1954 | 84 | 4 | 4 | 9 | 5 | 2 | - |
| 1953 | 77 | 4 | 4 | 8 | 5 | 2 | - |
| 1952 | 72 | 3 | 3 | 8 | 5 | 2 | - |
| 1951 | 67 | 3 | 3 | 7 | 5 | 2 | - |
| 1950 | 62 | 3 | 3 | 7 | 4 | 1 | - |
| 1949 | 58 | 3 | 2 | 7 | 3 | 1 | - |
| 1948 | 53 | 2 | 2 | 8 | 3 | 1 | - |
| 1947 | 45 | 2 | - | 6 | 3 | 1 | - |
| 1946 | 42 | 2 | - | 4 | 3 | 1 | - |
| 1945 | 36 | 2 | - | 4 | 3 | 1 | - |
| 1944 | 33 | 2 | - | 4 | 3 | 1 | - |

central office administrative staff and central office auxiliary staff.

Variable 10: COAd plus principals. The total numbers of central office administrative staff and school principals.

Variable 11: total central office staff. The total numbers of central office administrative staff, central office auxiliary staff, and central office support staff.

Variable 12: COAd, COAx, and principals. The total numbers of central office administrative staff, central office auxiliary staff, and school principals.

Variable 13: Senior COAd. The total numbers of central office senior administrative staff.

Variable 14: Intermediate COAd. The total numbers of central office intermediate administrative staff.

Variable 15: Supervisory COAd. The total numbers of central office supervisory administrative staff.

Variable 16: Service COAd. The total numbers of central office service administrative staff.

Variable 17: COAxP. The total numbers of central office auxiliary staff concerned with pupils.

Variable 18: COAxT. The total numbers of central office auxiliary staff concerned with teachers.

In addition to Table 4, four graphs have been

developed in order to assist in the identification of growth patterns in the EPSD. Figure 1 illustrates the growth in three measures of the district's size (schools, pupils, and teachers plus principals). Figure 2 shows the expansion of three components of the district's central office staff (COAd, COAx, and COS). Figure 3 shows the growth of four divisions of the district's central office administrative staff (senior, intermediate, supervisory, and service). Figure 4 illustrates graphically the growth of both parts of the central office auxiliary staff (COAxP and COAxT).

Figure 1 has used three different scales in order to show more distinctly the growth in the numbers of schools, pupils, and teachers plus principals. All three measures of district size have increased at a relatively uniform rate over the past twenty-five years.

Figure 2 shows the rates of growth of the various components (COAd, COAx, and COS) of the district's central office staff. The graph lines indicate moderate rates of growth for all three components prior to 1964. From 1964 to 1969, however, all three parts of the district's central office staff have increased at a much faster rate.

Figure 3 indicates the rates of growth of the four divisions (senior, intermediate, supervisory, and service) of the district's central office administrative staff. Prior to 1964 all four divisions increased at a very slow rate. With the exception of the central office senior administrative staff, all these divisions showed rapid rates

Figure 1
Yearly Changes in Numbers of Schools, Pupils,
and Teachers plus Principals

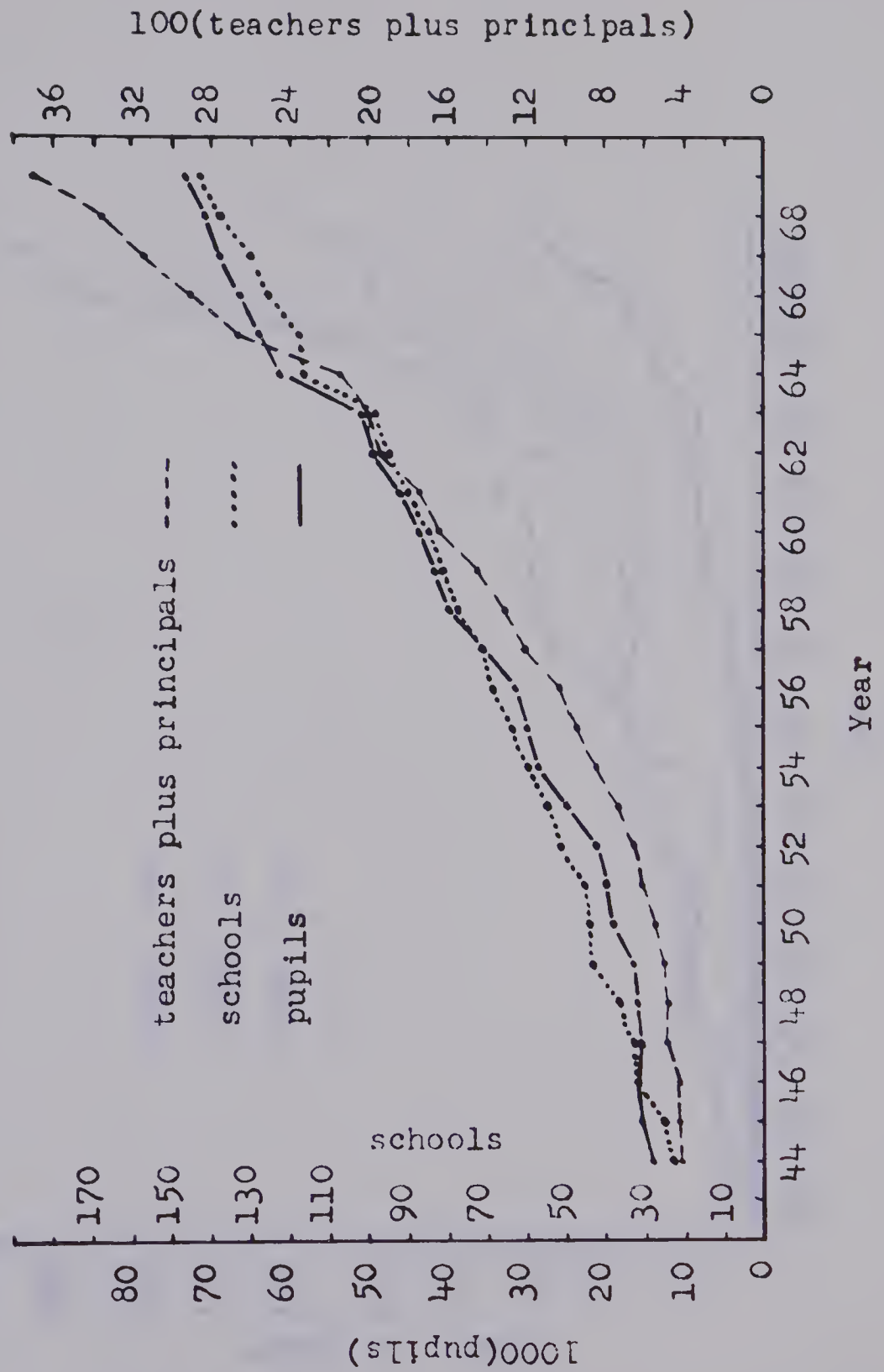


Figure 2
Yearly Changes in Numbers of Central Office Staff

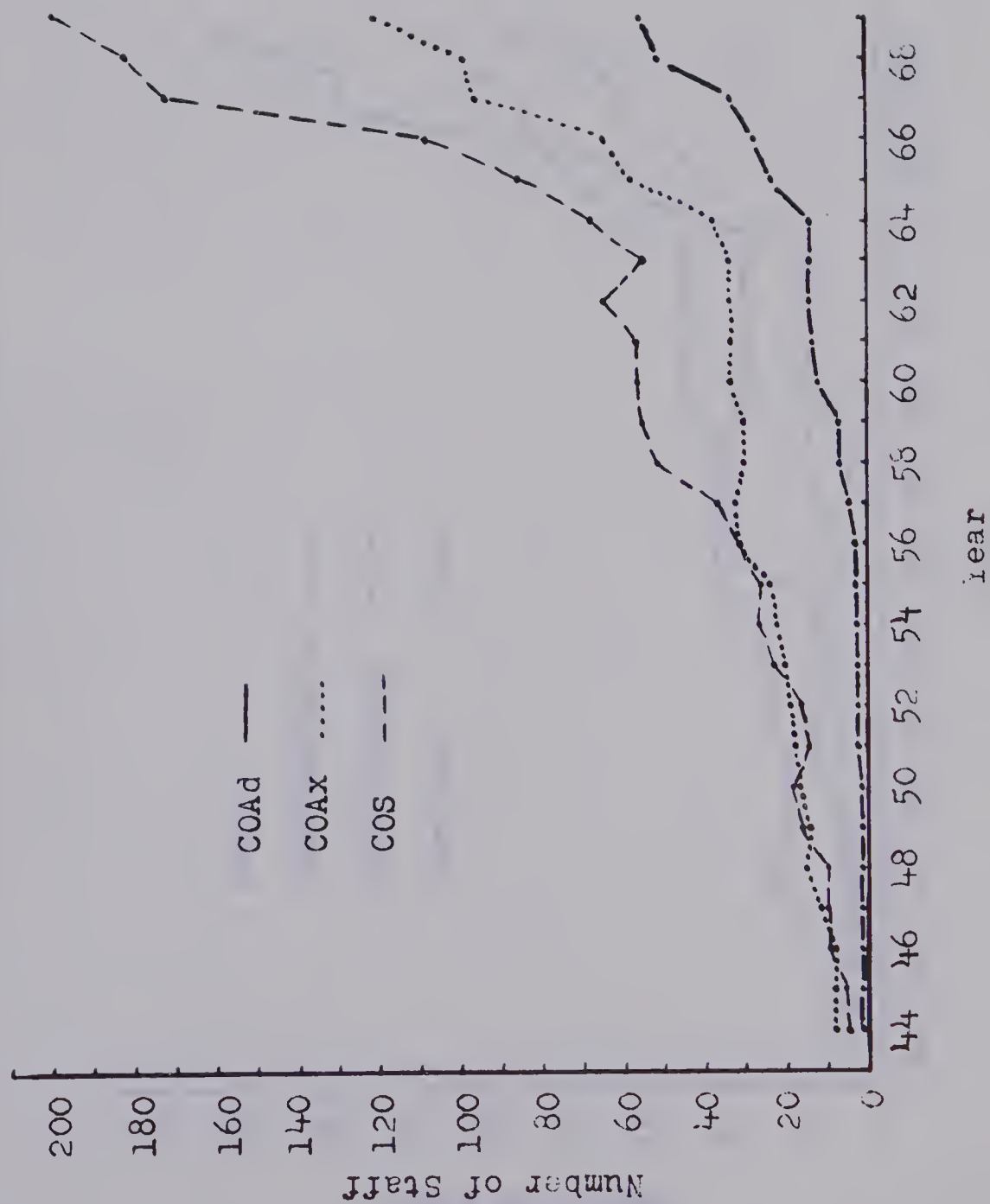


Figure 3
 Yearly Changes in Numbers of Central Office
 Administrative staff

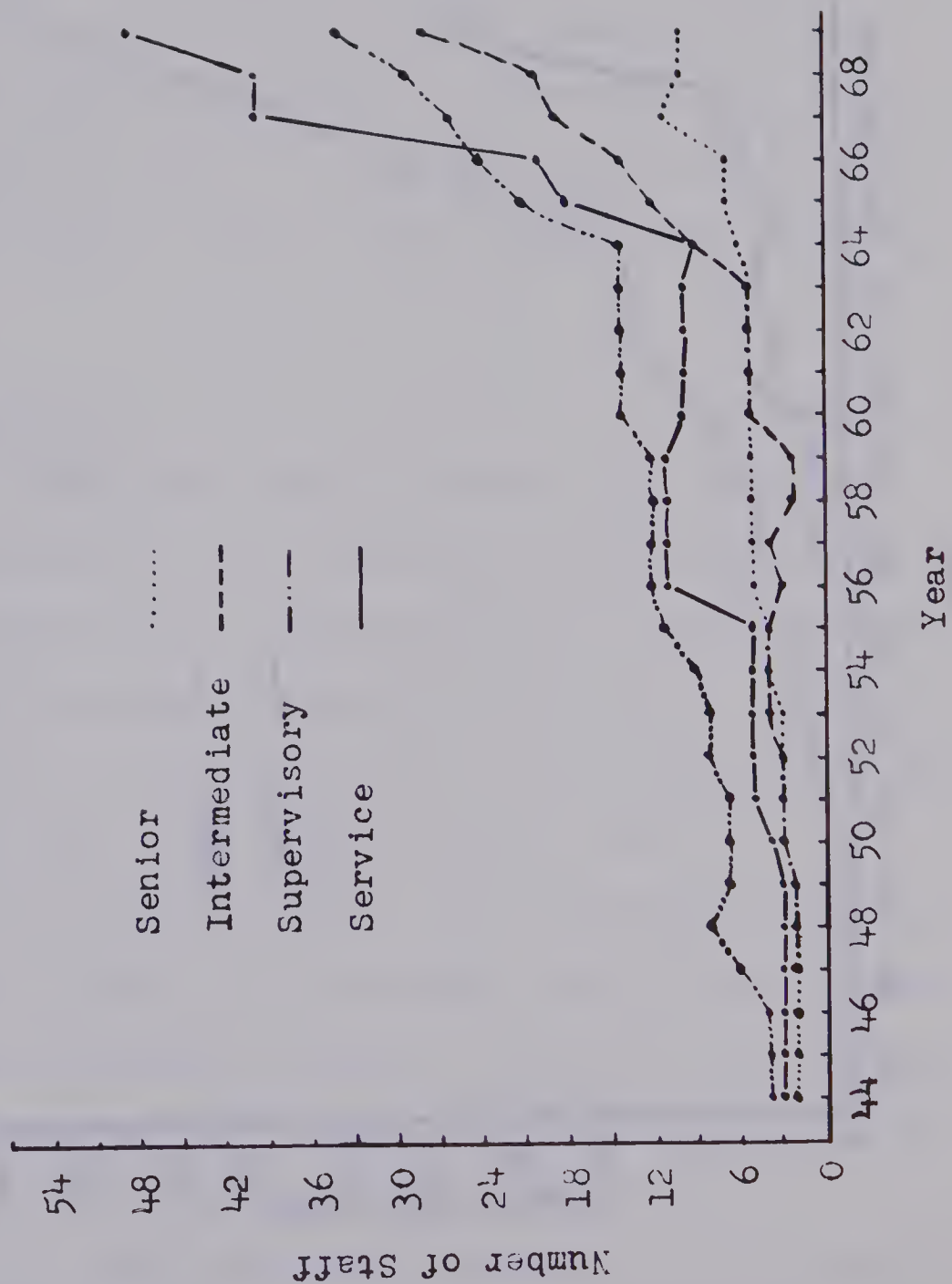
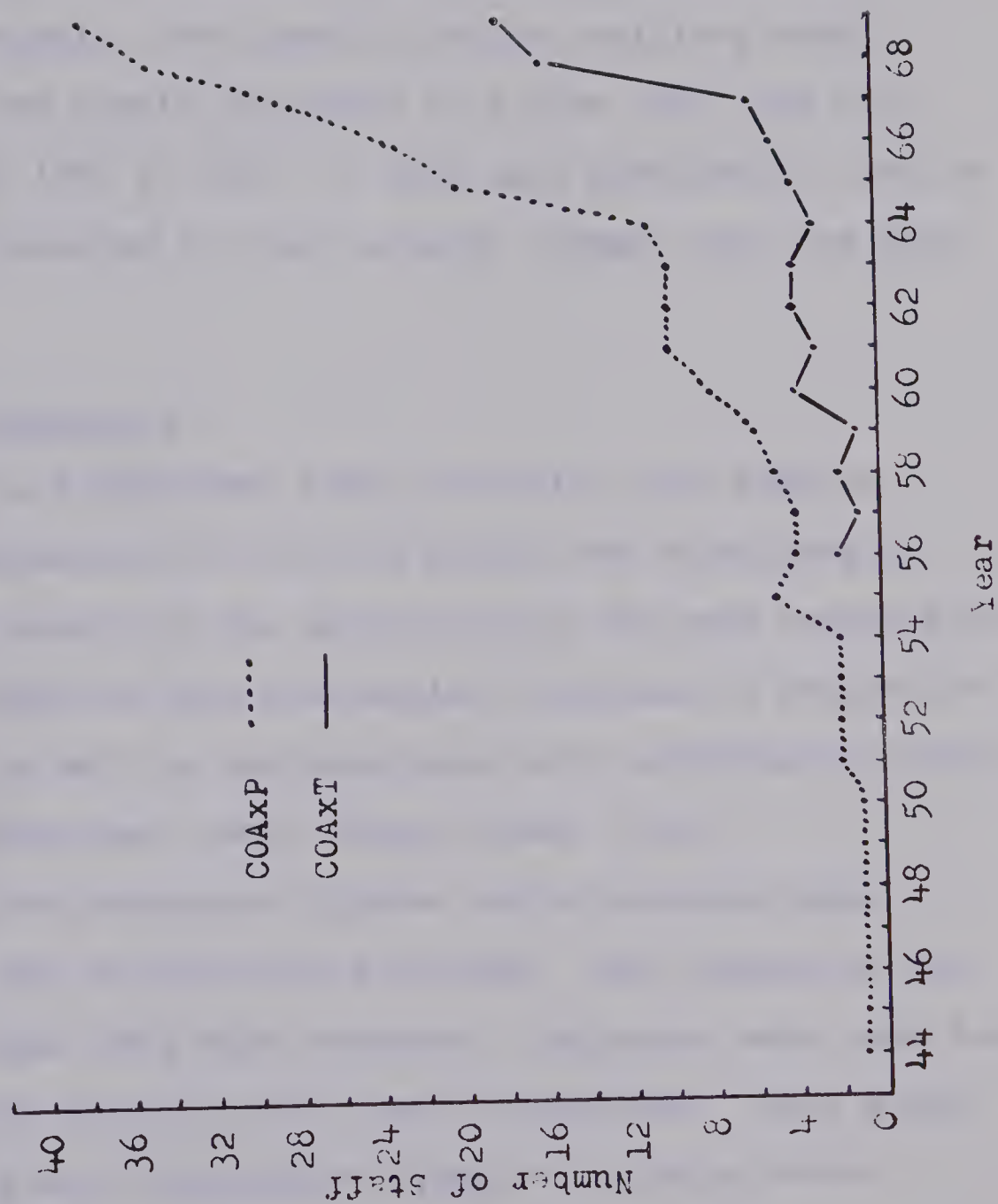


Figure 4
Yearly Changes in Numbers of Central Office
Auxiliary Staff



of growth from 1964 to 1969.

Figure 4 shows the expansion of both parts (COAxP and COAxT) of the district's central office auxiliary staff. From 1944 to 1964 the central office auxiliary staff concerned with teachers had a very slow rate of growth. Subsequent to 1964, however, this category (COAxT) has increased sharply. The central office auxiliary staff concerned with pupils increased at a slow rate from its beginning in 1956 to 1967. A much more substantial rate of growth has occurred in this category (COAxP) over the past two years.

Summary of Chapter 3

As an independent school district, the EPSD is largely responsible for its own hiring and organizing of staff. The growth of the district over the past twenty-five years has resulted from substantial increases in Edmonton's population as well as amalgamations with neighbouring school districts (Beverley, 1961; Jasper Place, 1964).

All the necessary figures and information were collected from the district's records. The assumption was made that these data were accurate. Estimates were made for a few figures that had been lost or destroyed. This study was intended as a descriptive study of a single school district and no attempt whatsoever was made to generalize these findings to any other school district.

The total numbers of schools, pupils, teachers, principals, and central office staff for each of the district's

last twenty-five school years were presented in tabular form. Four graphs were presented showing the rates of growth of some measures of district size and rates of growth of some of the district's components.

Chapter 4

DESCRIPTIONS OF VARIOUS MEASURES OF GROWTH

In Chapter 3, the basic data obtained from the district's records were described in both tabular and graphic form. The independent growth of each component was presented in Table 4, as well as in Figures 1, 2, 3, and 4.

This chapter describes other measures of district growth. A number of ratios were established by comparing the growth of several components of the EPSD to the expansion of the entire district, over the past twenty-five years. In this way, a more detailed longitudinal analysis of the growth of certain administrative and auxiliary components of the district could be made. The total numbers of schools, pupils, teachers, teachers plus principals, total professional staff, and total central office staff were some of the measures used to determine district size. Many of these ratios are also described in graphic form in this chapter.

DESCRIPTION OF THE RESULTS

Central Office Administrative Growth

The first series of ratios presented in Table 5 depicts the relationship between the growth in the numbers of central office administrative staff and the growth of the

Table 5

Ratios of Numbers of Central Office Administrative Staff
to Various Measures of District Size

| Year | COAd ÷ schools | 1000 (COAd) ÷ pupils | 100 (COAd) ÷ teachers | 100 (COAd) ÷ (teachers + principals) | 100 (COAd) ÷ (teachers + principals + COAd + COAx) | COAd ÷ (COAd + COAx + COS) |
|------|----------------------|----------------------------|-----------------------------|---|---|----------------------------------|
| 1969 | .85 | 1.64 | 3.40 | 3.27 | 3.12 | .32 |
| 1968 | .72 | 1.38 | 3.06 | 2.94 | 2.81 | .30 |
| 1967 | .74 | 1.39 | 3.17 | 3.04 | 2.92 | .32 |
| 1966 | .52 | .97 | 2.34 | 2.24 | 2.17 | .32 |
| 1965 | .49 | .90 | 2.26 | 2.16 | 2.10 | .35 |
| 1964 | .32 | .61 | 1.86 | 1.76 | 1.72 | .32 |
| 1963 | .35 | .66 | 1.80 | 1.71 | 1.67 | .33 |
| 1962 | .36 | .69 | 1.88 | 1.78 | 1.74 | .30 |
| 1961 | .38 | .74 | 2.06 | 1.95 | 1.90 | .33 |
| 1960 | .40 | .78 | 2.15 | 2.04 | 1.99 | .33 |
| 1959 | .37 | .73 | 2.14 | 2.03 | 1.97 | .33 |
| 1958 | .38 | .77 | 2.39 | 2.25 | 2.19 | .34 |
| 1957 | .45 | .89 | 2.83 | 2.66 | 2.58 | .43 |
| 1956 | .45 | .93 | 3.12 | 2.92 | 2.82 | .46 |
| 1955 | .38 | .78 | 2.64 | 2.47 | 2.40 | .44 |
| 1954 | .37 | .78 | 2.77 | 2.57 | 2.50 | .43 |
| 1953 | .36 | .78 | 2.84 | 2.63 | 2.56 | .45 |
| 1952 | .37 | .83 | 3.06 | 2.83 | 2.75 | .50 |
| 1951 | .38 | .87 | 3.20 | 2.96 | 2.86 | .51 |
| 1950 | .39 | .88 | 3.24 | 2.99 | 2.90 | .47 |
| 1949 | .33 | .78 | 2.93 | 2.69 | 2.61 | .45 |
| 1948 | .41 | .91 | 3.42 | 3.15 | 3.05 | .58 |
| 1947 | .33 | .70 | 2.62 | 2.43 | 2.37 | .50 |
| 1946 | .28 | .58 | 2.23 | 2.07 | 2.02 | .47 |
| 1945 | .35 | .59 | 2.24 | 2.10 | 2.05 | .56 |
| 1944 | .39 | .61 | 2.28 | 2.16 | 2.11 | .60 |

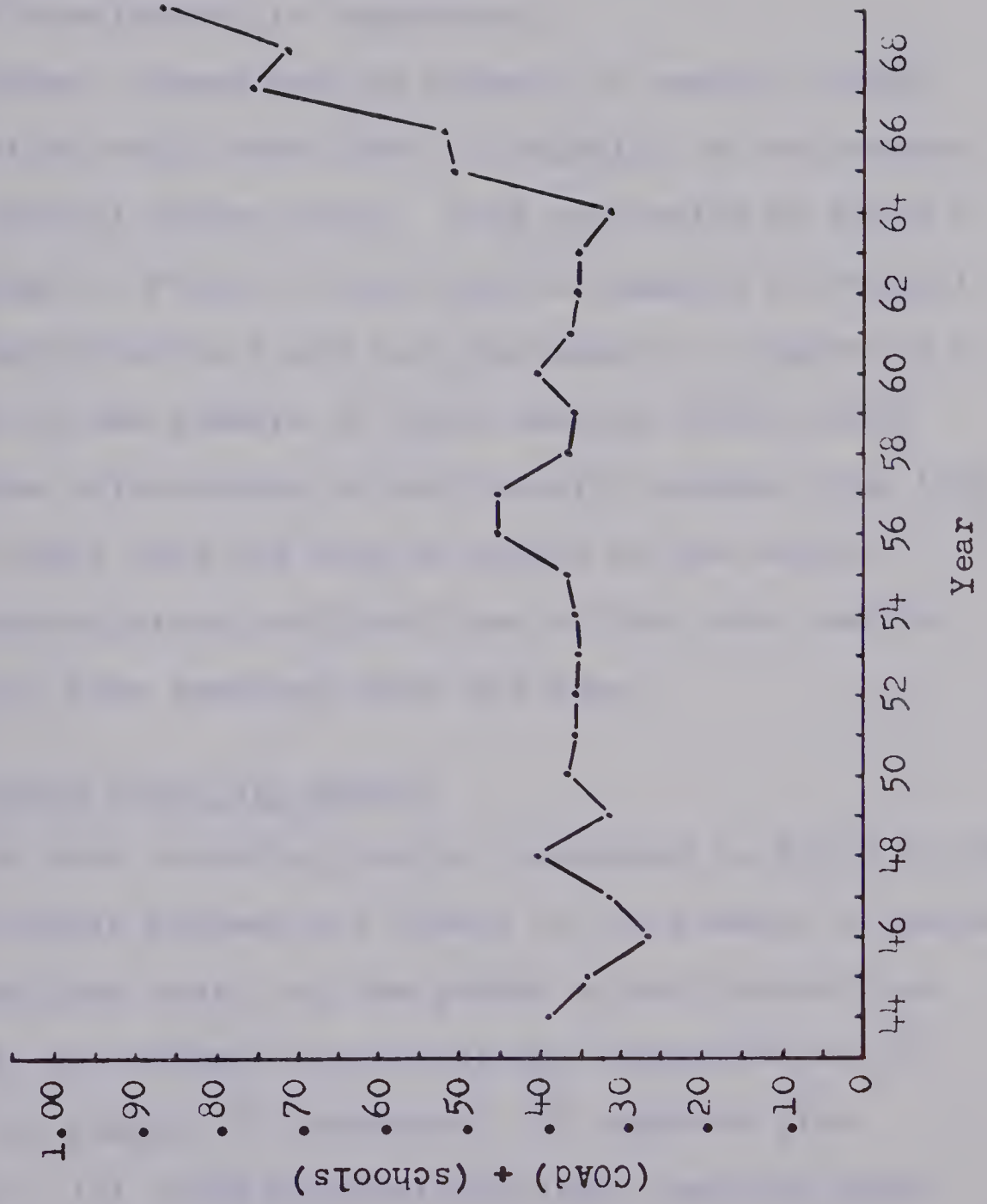
district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers, (4) teachers plus principals, (5) total professional staff, and (6) total central office staff. The central office administrative staff consists of all those working in the district's central office who perform mainly administrative functions.

When the growth in the numbers of central office administrative staff was compared to the growth in the numbers of schools in the district, a general trend of increase was observed. Various fluctuations took place from 1944 to 1967, but from 1967 to 1969 a substantial proportional increase took place in the numbers of central office administrative staff. Figure 5 shows graphically this relationship between the growth in the numbers of central office administrative staff and the growth in the numbers of schools in the district.

Next, the growth in the numbers of central office administrative staff is compared to the growth in the numbers of pupils in the EPSD. As in the first set of ratios, substantial fluctuations take place from 1944 to 1967 but always within the same range (.58 - .97). Subsequent to 1967, however, the numbers of central office staff have increased sharply in relation to the growth in the numbers of pupils in the district.

The central office administrative staff has fluctuated considerably but has changed very little in relation to the growth in the numbers of (1) teachers, (2)

Figure 5
Ratios of Numbers of Central Office Administrative
Staff to Numbers of Schools



teachers plus principals, and (3) total professional staff. Figure 6 shows the relationship between the growth in the numbers of central office administrative staff and the growth in the numbers of the district's teachers plus principals. The graph shows that the ratios have fluctuated sharply over the twenty-five year period, but no definite pattern of development is observable.

Figure 7 shows how the numbers of central office administrative staff have grown in relation to the numbers of total central office staff. Both the ratios in Table 5 and the graph in Figure 7 show that the numbers of central office administrative staff have decreased in proportion to the growth in the numbers of total central office staff. This inverse relationship is particularly evident from 1944 to 1958. After 1958 the rate of growth of the central office administrative staff and that of the total central office staff have remained about the same.

Central Office Auxiliary Growth

The next series of ratios, presented in Table 6, shows the relationship between the growth in the numbers of central office auxiliary staff and the growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers, (4) teachers plus principals, (5) total professional staff, and (6) total central office staff. The central office auxiliary staff refers to all those employed in the district's central office who work directly with pupils or instructional matters.

Figure 6
 Ratios of Numbers of Central Office Administrative
 Staff to Numbers of Teachers plus Principals

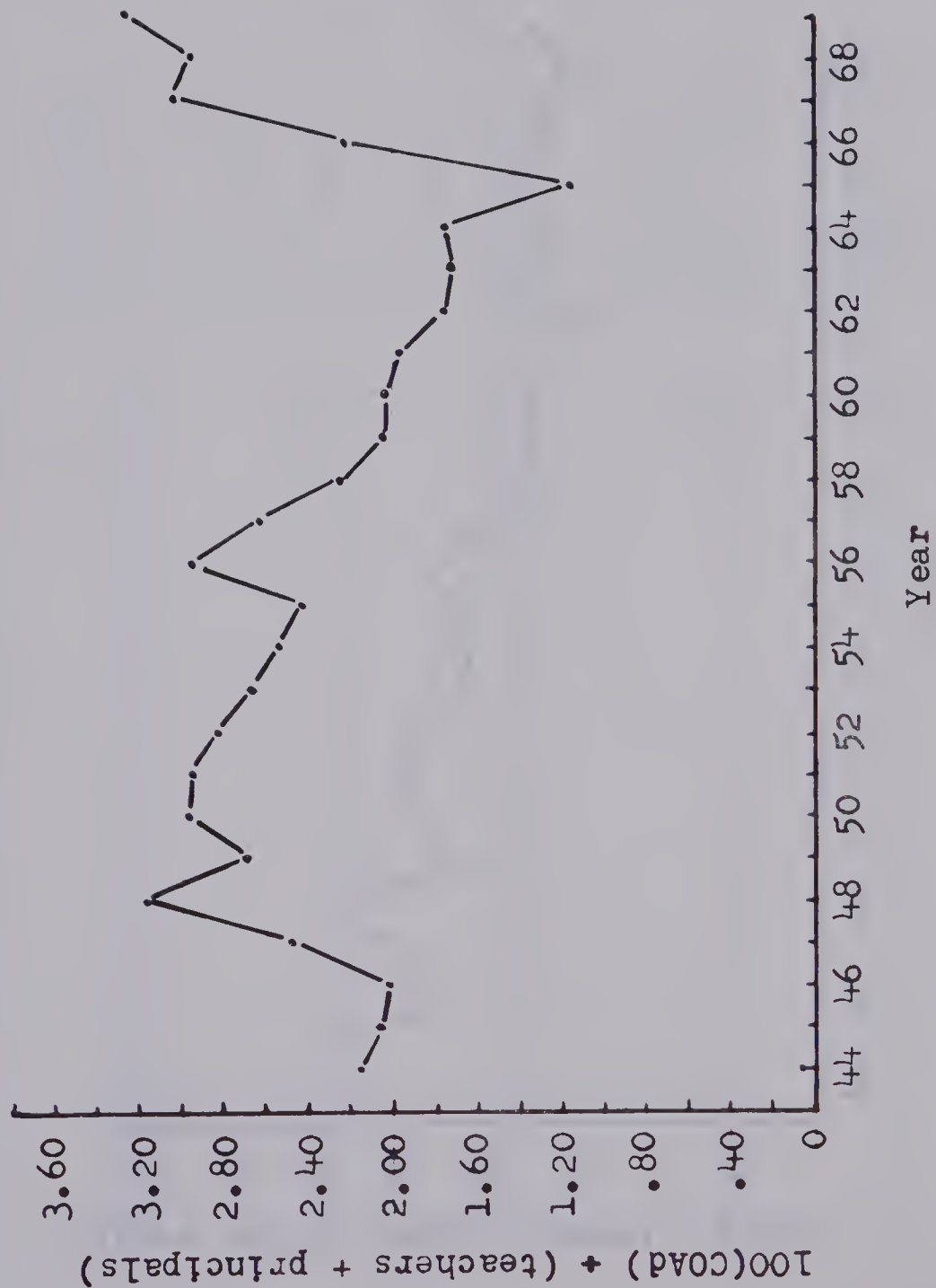


Figure 7
 Ratios of Numbers of Central Office Administrative
 Staff to Numbers of Total Central Office Staff

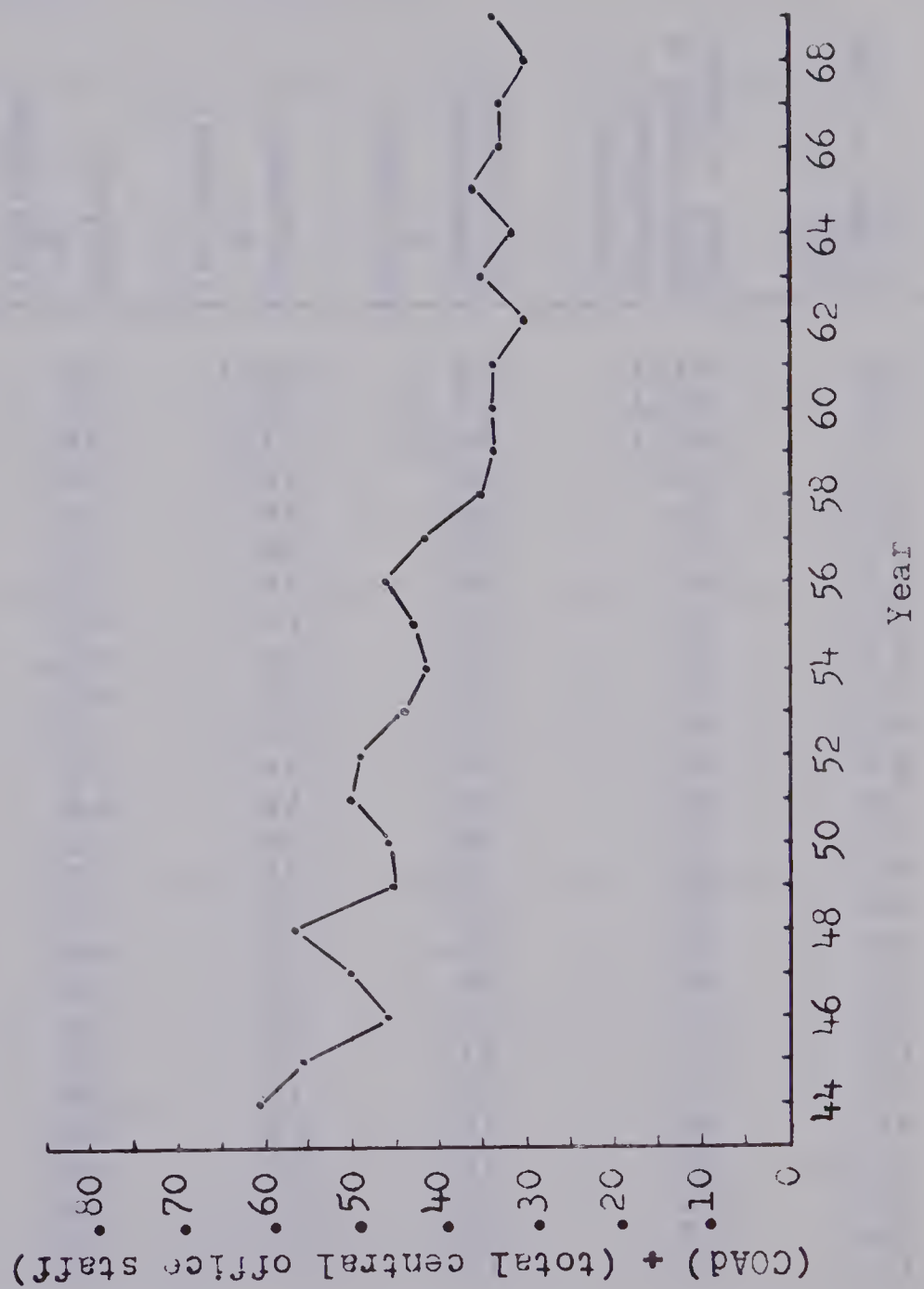


Table 6

Ratios of Numbers of Central Office Auxiliary Staff
to Various Measures of District Size

| Year | COAx ÷ schools | 100 (COAx) ÷ pupils | 100 (COAx) ÷ teachers | 100 (COAx) ÷ (teachers + principals) | 100 (COAx) ÷ (teachers + principals + COAd + COAx) | COAx ÷ (COAd + COAx + COS) |
|------|----------------------|---------------------------|-----------------------------|---|---|----------------------------------|
| 1969 | .39 | .76 | 1.57 | 1.51 | 1.44 | .15 |
| 1968 | .37 | .71 | 1.58 | 1.51 | 1.45 | .15 |
| 1967 | .26 | .49 | 1.12 | 1.08 | 1.04 | .11 |
| 1966 | .22 | .42 | 1.01 | .96 | .93 | .14 |
| 1965 | .20 | .37 | .94 | .89 | .87 | .14 |
| 1964 | .12 | .23 | .69 | .65 | .63 | .12 |
| 1963 | .14 | .27 | .74 | .70 | .69 | .13 |
| 1962 | .15 | .28 | .77 | .73 | .72 | .12 |
| 1961 | .14 | .28 | .79 | .75 | .73 | .13 |
| 1960 | .14 | .28 | .76 | .72 | .70 | .12 |
| 1959 | .09 | .17 | .50 | .47 | .46 | .08 |
| 1958 | .09 | .18 | .56 | .52 | .51 | .08 |
| 1957 | .07 | .14 | .44 | .42 | .40 | .07 |
| 1956 | .09 | .18 | .60 | .56 | .55 | .09 |
| 1955 | .08 | .16 | .55 | .51 | .50 | .09 |
| 1954 | .03 | .07 | .25 | .23 | .23 | .04 |
| 1953 | .04 | .08 | .28 | .26 | .26 | .05 |
| 1952 | .04 | .09 | .32 | .30 | .29 | .05 |
| 1951 | .04 | .10 | .36 | .33 | .32 | .06 |
| 1950 | .02 | .05 | .19 | .18 | .17 | .03 |
| 1949 | .02 | .06 | .21 | .19 | .19 | .03 |
| 1948 | .03 | .06 | .23 | .21 | .20 | .04 |
| 1947 | .03 | .06 | .24 | .22 | .22 | .05 |
| 1946 | .03 | .06 | .25 | .23 | .22 | .05 |
| 1945 | .04 | .07 | .25 | .23 | .23 | .06 |
| 1944 | .04 | .07 | .25 | .24 | .23 | .07 |

The numbers of central office auxiliary staff increased moderately in relation to the growth in the numbers of schools in the district. A relatively sharp increase in these auxiliary ratios took place from 1964 to 1969.

The growth in the numbers of central office auxiliary staff has been rapid in relation to the growth in the numbers of pupils in the EPSD. A particularly sharp proportional increase has taken place in these central office auxiliary ratios in 1968 and 1969.

Figure 8 compares the rate of growth in the numbers of central office auxiliary staff to the growth in the numbers of teachers plus principals. These auxiliary ratios indicate that the central office auxiliary staff has increased sharply in relation to the growth of the teachers plus principals over the past twenty-five years. Very similar patterns of auxiliary ratios were derived when the growth in the numbers of central office auxiliary staff was compared to the growth in the numbers of teachers and to the growth in the numbers of total professional staff in the district.

The final set of ratios in Table 6 compares the growth in the numbers of central office auxiliary staff to the growth in the numbers of total central office staff. These ratios show that the central office auxiliary staff has gradually become a proportionally larger segment of the total central office staff.

Central Office Administrative and Auxiliary Growth

Table 7 presents the series of ratios which shows the

Figure 8
 Ratios of Numbers of Central Office Auxiliary Staff
 to Numbers of Teachers plus Principals

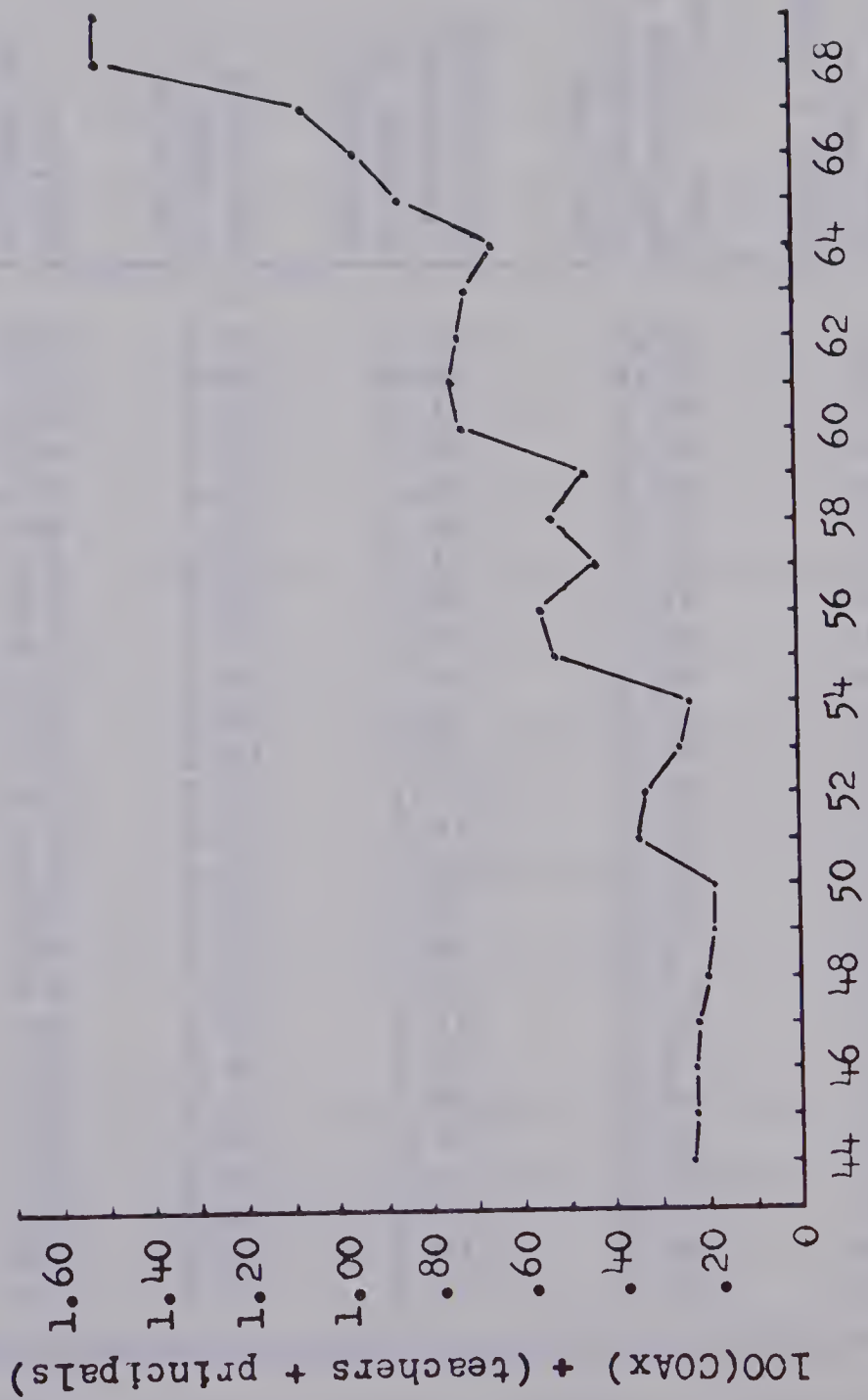


Table 7

Ratios of Numbers of Central Office Administrative and
Auxiliary Staff to Various Measures of District Size

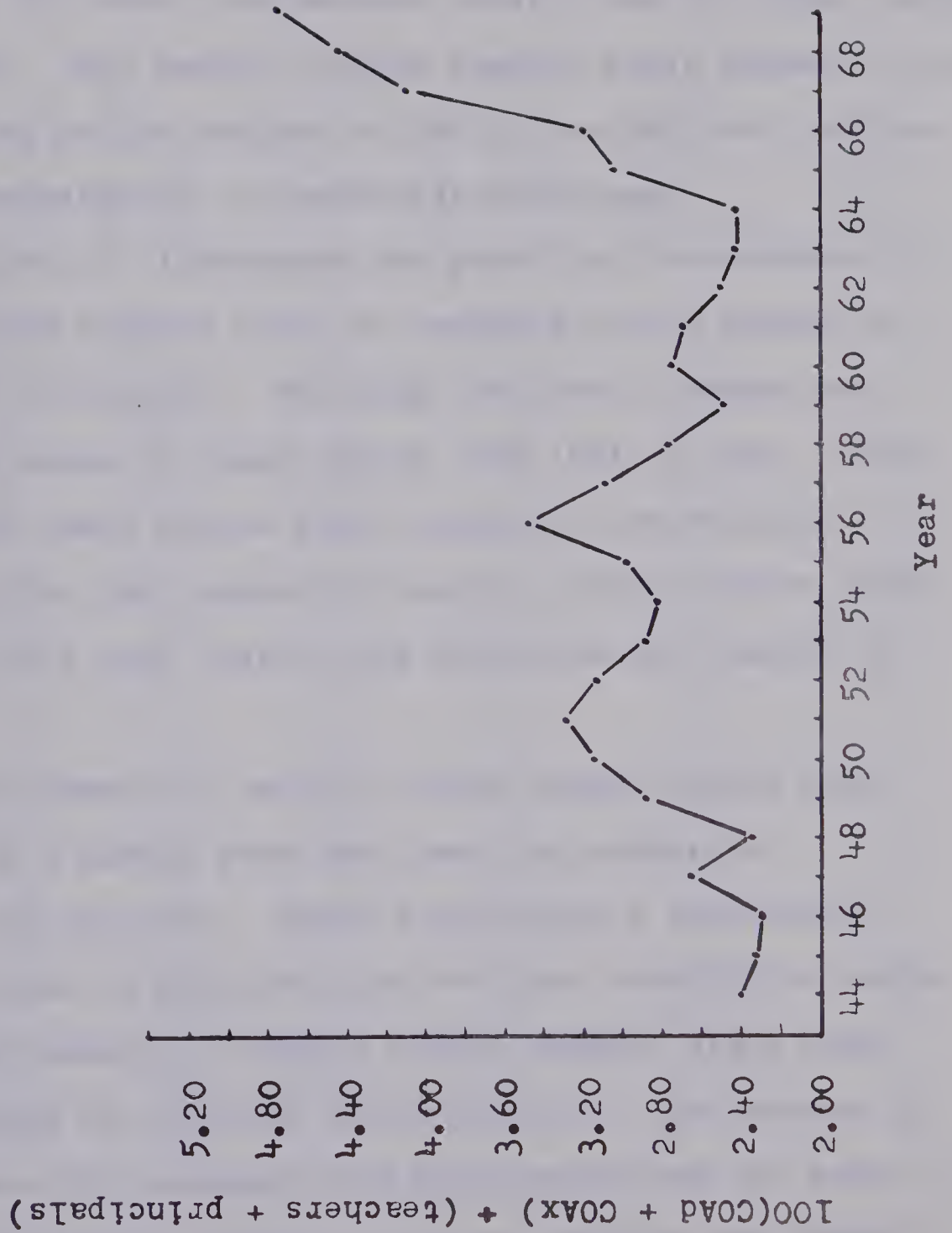
| Year | $\frac{\text{COAd} + \text{COAx}}{\text{schools}}$ | $\frac{1000 (\text{COAd} + \text{COAx})}{\text{pupils}}$ | $\frac{100 (\text{COAd} + \text{COAx})}{\text{teachers}}$ | $\frac{100 (\text{COAd} + \text{COAx})}{(\text{teachers} + \text{principals})}$ | $\frac{100 (\text{COAd} + \text{COAx})}{(\text{teachers} + \text{principals} + \text{COAd} + \text{COAx})}$ | $\frac{(\text{COAd} + \text{COAx})}{(\text{COAd} + \text{COAx} + \text{COS})}$ |
|------|--|--|---|---|---|--|
| 1969 | 1.25 | 2.40 | 4.97 | 4.78 | 4.56 | .47 |
| 1968 | 1.09 | 2.09 | 4.64 | 4.45 | 4.26 | .45 |
| 1967 | 1.00 | 1.88 | 4.30 | 4.12 | 3.96 | .43 |
| 1966 | .74 | 1.39 | 3.35 | 3.20 | 3.10 | .46 |
| 1965 | .69 | 1.27 | 3.20 | 3.06 | 2.96 | .49 |
| 1964 | .44 | .84 | 2.55 | 2.41 | 2.35 | .43 |
| 1963 | .49 | .93 | 2.54 | 2.41 | 2.35 | .46 |
| 1962 | .51 | .97 | 2.65 | 2.53 | 2.46 | .42 |
| 1961 | .52 | 1.02 | 2.85 | 2.70 | 2.63 | .45 |
| 1960 | .54 | 1.06 | 2.91 | 2.76 | 2.69 | .45 |
| 1959 | .46 | .90 | 2.64 | 2.49 | 2.43 | .40 |
| 1958 | .47 | .95 | 2.94 | 2.77 | 2.70 | .42 |
| 1957 | .52 | 1.02 | 3.27 | 3.08 | 2.99 | .50 |
| 1956 | .54 | 1.11 | 3.73 | 3.48 | 3.37 | .54 |
| 1955 | .45 | .94 | 3.19 | 2.98 | 2.90 | .53 |
| 1954 | .40 | .85 | 3.02 | 2.81 | 2.73 | .47 |
| 1953 | .40 | .86 | 3.12 | 2.89 | 2.81 | .50 |
| 1952 | .41 | .92 | 3.39 | 3.13 | 3.03 | .55 |
| 1951 | .43 | .96 | 3.56 | 3.28 | 3.18 | .57 |
| 1950 | .41 | .93 | 3.43 | 3.16 | 3.17 | .50 |
| 1949 | .35 | .83 | 3.14 | 2.88 | 2.80 | .48 |
| 1948 | .43 | .97 | 3.64 | 3.36 | 3.25 | .62 |
| 1947 | .36 | .76 | 2.86 | 2.65 | 2.58 | .55 |
| 1946 | .31 | .65 | 2.48 | 2.30 | 2.25 | .53 |
| 1945 | .38 | .65 | 2.49 | 2.34 | 2.28 | .63 |
| 1944 | .43 | .67 | 2.54 | 2.40 | 2.34 | .67 |

relationship between the growth in the numbers of central office administrative and auxiliary staff and the growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers, (4) teachers plus principals, (5) total professional staff, and (6) total central office staff. All those working in the district's central office who perform either administrative or auxiliary functions are included in this category.

The growth in the numbers of central office administrative and auxiliary staff was highly irregular from 1944 to 1964 when compared to the growth in the numbers of (1) schools, (2) pupils, (3) teachers, (4) teachers plus principals, and (5) total professional staff. The central office administrative and auxiliary staff increased sharply from 1964 to 1969 when compared to the growth in the above measures of district size. Figure 9, which compares the growth in the numbers of central office administrative and auxiliary staff to the growth in the numbers of teachers plus principals, illustrates the irregularity of the ratios from 1944 to 1964 as well as the sharp increases from 1964 to 1969.

The ratios in Table 7, which compare the growth in the numbers of central office administrative and auxiliary staff to the growth in the numbers of total central office staff, indicate that the central office administrative and auxiliary staffs have gradually become a smaller proportion of the total central office staff.

Figure 9
Ratios of Numbers of Central Office Administrative
and Auxiliary Staff to Numbers of
Teachers plus Principals



Central Office Support Growth

Table 8 presents the series of ratios which shows the relationship between the growth in the numbers of central office support staff and the growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers, (4) teachers plus principals, (5) total professional staff, and (6) total central office staff. The central office support staff refers to all those working in the central office of the EPSD who perform clerical, secretarial, or custodial functions.

Figure 10 illustrates the growth in the numbers of central office support staff as compared to the growth in the numbers of schools. The graph reflects a steady but moderate increase in these ratios from 1944 to 1964. From 1964 to 1969 these ratios have increased very sharply, indicating that the numbers of central office support staff have grown at a much faster rate than have the numbers of schools.

The numbers of central office support staff have increased at a faster rate than have the numbers of pupils in the district. These ratios show a reasonably consistent rate of increase over the past twenty-five years.

The numbers of central office support staff have also increased in relation to the growth in the numbers of (1) teachers, (2) teachers plus principals, and (3) total professional staff. Figure 11, which compares the growth in the numbers of central office support staff to the growth

Table 8

Ratios of Numbers of Central Office Support Staff
to Various Measures of District Size

| Year | $\text{COS} \div$ schools | $1000 (\text{COS}) \div$ pupils | $100 (\text{COS}) \div$ teachers | $100 (\text{COS}) \div$ (teachers + principals) | $100 (\text{COS}) \div$ (teachers + principals + COAd + COAx) | $\text{COS} \div$ (COAd + COAx + COS) |
|------|------------------------------|------------------------------------|-------------------------------------|---|--|---|
| 1969 | 1.41 | 2.71 | 5.62 | 5.40 | 5.16 | .53 |
| 1968 | 1.32 | 2.53 | 5.63 | 5.40 | 5.17 | .55 |
| 1967 | 1.32 | 2.49 | 5.69 | 5.45 | 5.24 | .57 |
| 1966 | .87 | 1.63 | 3.92 | 3.75 | 3.64 | .54 |
| 1965 | .73 | 1.33 | 3.35 | 3.20 | 3.11 | .51 |
| 1964 | .58 | 1.10 | 3.33 | 3.15 | 3.08 | .57 |
| 1963 | .56 | 1.07 | 2.91 | 2.76 | 2.70 | .53 |
| 1962 | .68 | 1.32 | 3.59 | 3.41 | 3.32 | .57 |
| 1961 | .63 | 1.24 | 3.45 | 3.27 | 3.19 | .55 |
| 1960 | .66 | 1.29 | 3.54 | 3.36 | 3.27 | .55 |
| 1959 | .68 | 1.34 | 3.93 | 3.71 | 3.62 | .60 |
| 1958 | .65 | 1.32 | 4.06 | 3.82 | 3.72 | .58 |
| 1957 | .52 | 1.02 | 3.27 | 3.08 | 2.99 | .50 |
| 1956 | .45 | .93 | 3.12 | 2.92 | 2.82 | .46 |
| 1955 | .41 | .85 | 2.86 | 2.67 | 2.60 | .47 |
| 1954 | .45 | .96 | 3.40 | 3.16 | 3.07 | .53 |
| 1953 | .40 | .86 | 3.12 | 2.89 | 2.81 | .50 |
| 1952 | .33 | .74 | 2.74 | 2.53 | 2.46 | .45 |
| 1951 | .32 | .72 | 2.67 | 2.46 | 2.38 | .43 |
| 1950 | .41 | .93 | 3.43 | 3.16 | 3.07 | .50 |
| 1949 | .37 | .89 | 3.35 | 3.07 | 2.99 | .52 |
| 1948 | .27 | .60 | 2.28 | 2.10 | 2.03 | .38 |
| 1947 | .30 | .63 | 2.38 | 2.21 | 2.15 | .45 |
| 1946 | .28 | .58 | 2.23 | 2.07 | 2.02 | .47 |
| 1945 | .23 | .39 | 1.49 | 1.40 | 1.37 | .38 |
| 1944 | .22 | .34 | 1.27 | 1.20 | 1.17 | .33 |

Figure 10
 Ratios of Numbers of Central Office Support Staff
 to Numbers of Schools

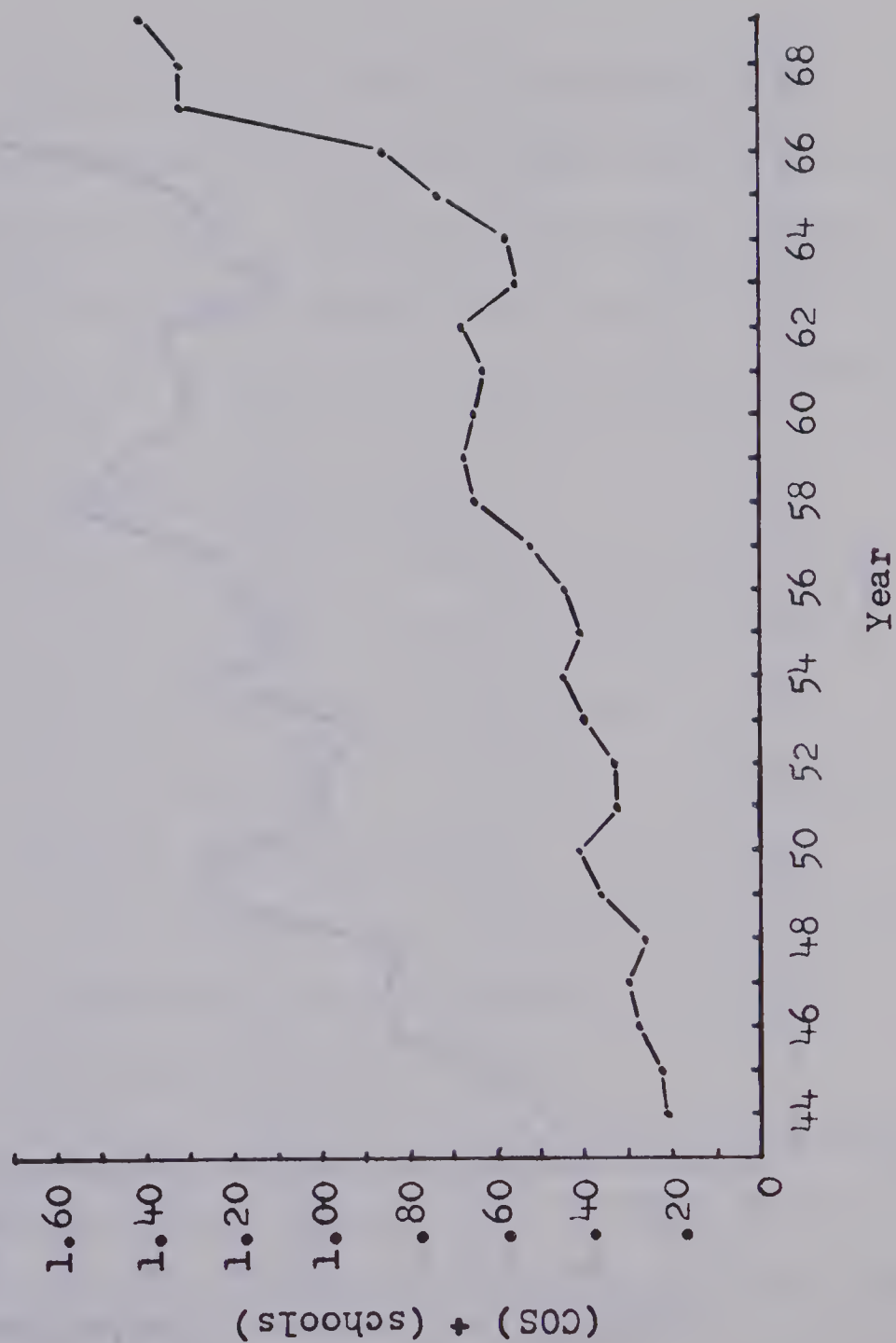
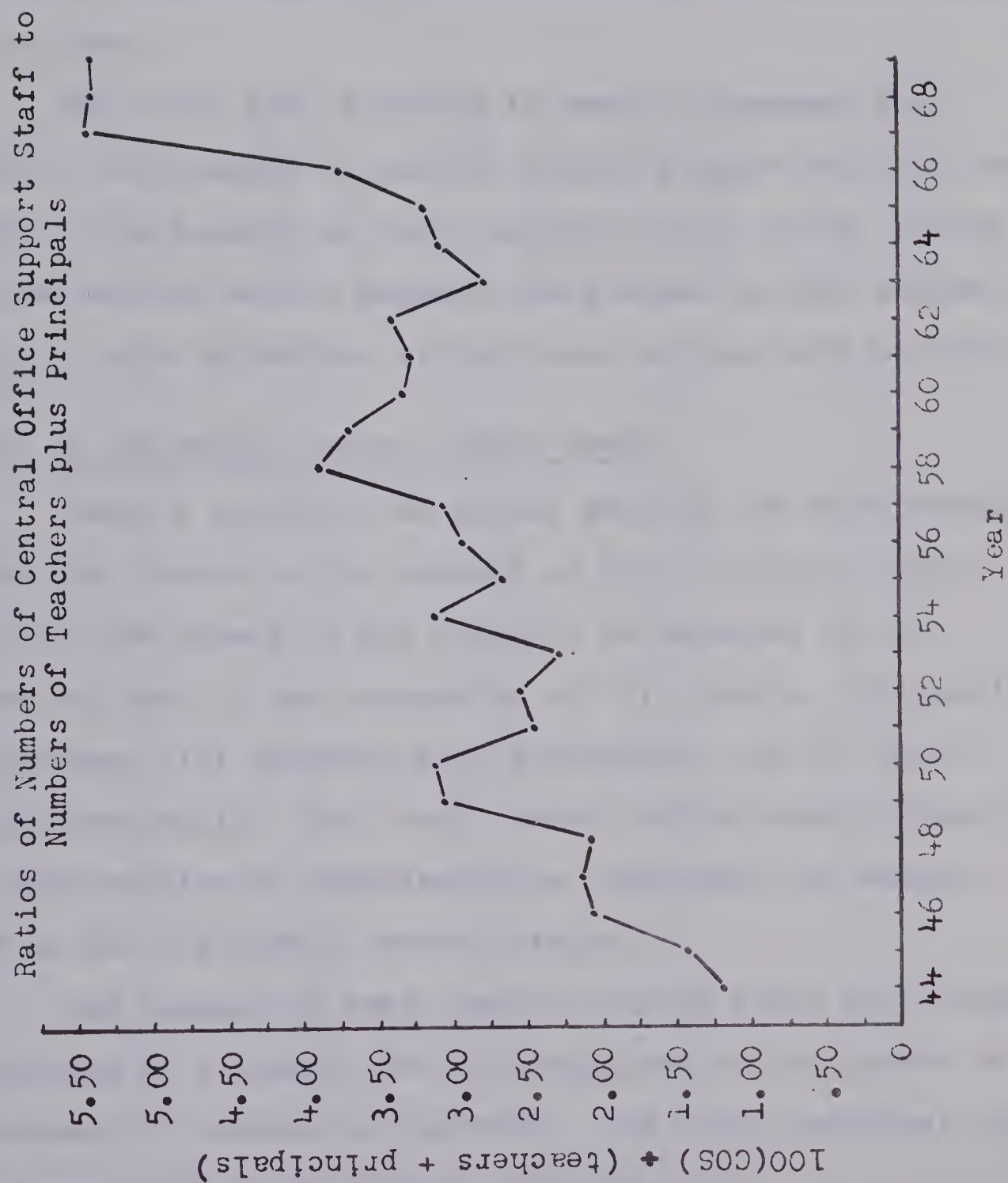


Figure 11



in the numbers of teachers plus principals in the district, indicates that the ratios have increased substantially. Table 8 and Figure 11 both indicate that the central office support staff has shown the highest comparative growth in relation to these three measures of district size (teachers, teachers plus principals, and total professional staff) from 1966 to 1969.

The final set of ratios in Table 8 compares the growth in the numbers of central office support staff to the growth in the numbers of total central office staff. Since 1944 the central office support staff seems to have become a slightly larger proportion of the total central office staff.

Growth of the Total Central Office Staff

Table 9 presents the ratios showing the relationship between the growth in the numbers of total central office staff and the growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers, (4) teachers plus principals, and (5) total professional staff. The total central office staff refers to all those working as administrative, auxiliary, or support staff in the district's central office.

The numbers of total central office staff have tended to increase at a steady rate in comparison to the growth in the numbers of schools in the EPSD. The single sharpest rate of increase took place between 1966 and 1967.

The numbers of total central office staff have also increased in relation to the growth in the numbers of pupils

Table 9

Ratios of Numbers of Total Central Office Staff to
Various Measures of District Size

| Year | $(\text{COAd} + \text{COAx}) \div$ schools | $100 (\text{COAd} + \text{COAx}) \div$ pupils | $100 (\text{COAd} + \text{COAx}) \div$ teachers | $100 (\text{COAd} + \text{COAx}) \div$ (teachers + principals) | $100 (\text{COAd} + \text{COAx}) \div$ (teachers + principals + COAd + COAx) |
|------|---|--|--|--|---|
| 1969 | 2.65 | 5.11 | 10.59 | 10.19 | 9.72 |
| 1968 | 2.41 | 4.62 | 10.27 | 9.85 | 9.43 |
| 1967 | 2.32 | 4.38 | 9.99 | 9.58 | 9.20 |
| 1966 | 1.60 | 3.01 | 7.27 | 6.95 | 6.74 |
| 1965 | 1.42 | 2.60 | 6.55 | 6.26 | 6.07 |
| 1964 | 1.03 | 1.93 | 5.88 | 5.56 | 5.43 |
| 1963 | 1.06 | 2.03 | 5.49 | 5.22 | 5.10 |
| 1962 | 1.20 | 2.31 | 6.29 | 5.98 | 5.83 |
| 1961 | 1.16 | 2.25 | 6.30 | 5.97 | 5.81 |
| 1960 | 1.20 | 2.35 | 6.45 | 6.12 | 5.96 |
| 1959 | 1.14 | 2.24 | 6.56 | 6.20 | 6.05 |
| 1958 | 1.13 | 2.27 | 7.00 | 6.59 | 6.41 |
| 1957 | 1.04 | 2.05 | 6.54 | 6.16 | 5.97 |
| 1956 | .99 | 2.04 | 6.85 | 6.40 | 6.19 |
| 1955 | .86 | 1.79 | 6.06 | 5.66 | 5.49 |
| 1954 | .85 | 1.81 | 6.42 | 5.96 | 5.80 |
| 1953 | .80 | 1.72 | 6.24 | 5.79 | 5.63 |
| 1952 | .75 | 1.66 | 6.13 | 5.66 | 5.49 |
| 1951 | .74 | 1.69 | 6.23 | 5.75 | 5.56 |
| 1950 | .82 | 1.86 | 6.86 | 6.33 | 6.13 |
| 1949 | .72 | 1.72 | 6.49 | 5.95 | 5.78 |
| 1948 | .70 | 1.57 | 5.92 | 5.46 | 5.28 |
| 1947 | .67 | 1.40 | 5.24 | 4.86 | 4.73 |
| 1946 | .59 | 1.23 | 4.71 | 4.37 | 4.27 |
| 1945 | .63 | 1.04 | 3.98 | 3.74 | 3.65 |
| 1944 | .65 | 1.01 | 3.81 | 3.60 | 3.51 |

in the district. These ratios indicate that the largest proportional increases took place from 1964 to 1969.

The numbers of total central office staff have increased in a noticeable but irregular manner in relation to the growth in the numbers of (1) teachers, (2) teachers plus principals, and (3) total professional staff from 1944 to 1966. The numbers of total central office staff have increased sharply in relation to these three measures of district size over the last three years. Figure 12, which compares the growth in the numbers of total central office staff to the growth in the numbers of teachers plus principals, indicates that the ratios have increased at an irregular rate from 1944 to 1966 and that they have increased rapidly from 1966 to 1969. Most of the relative increases in the total central office staff have been due to the sharp expansion in the numbers of central office support staff and the growth in the numbers of central office auxiliary staff.

Growth of the Administrative Component

The ratios presented in Table 10 indicate the relationship between the growth in the numbers of the administrative component and the growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers, (4) teachers plus principals, and (5) total professional staff. The administrative component consists of the total numbers of central office administrative staff plus the total numbers of school principals in the district.

Figure 12
 Ratios of Numbers of Total Central Office Staff to
 Numbers of Teachers plus Principals

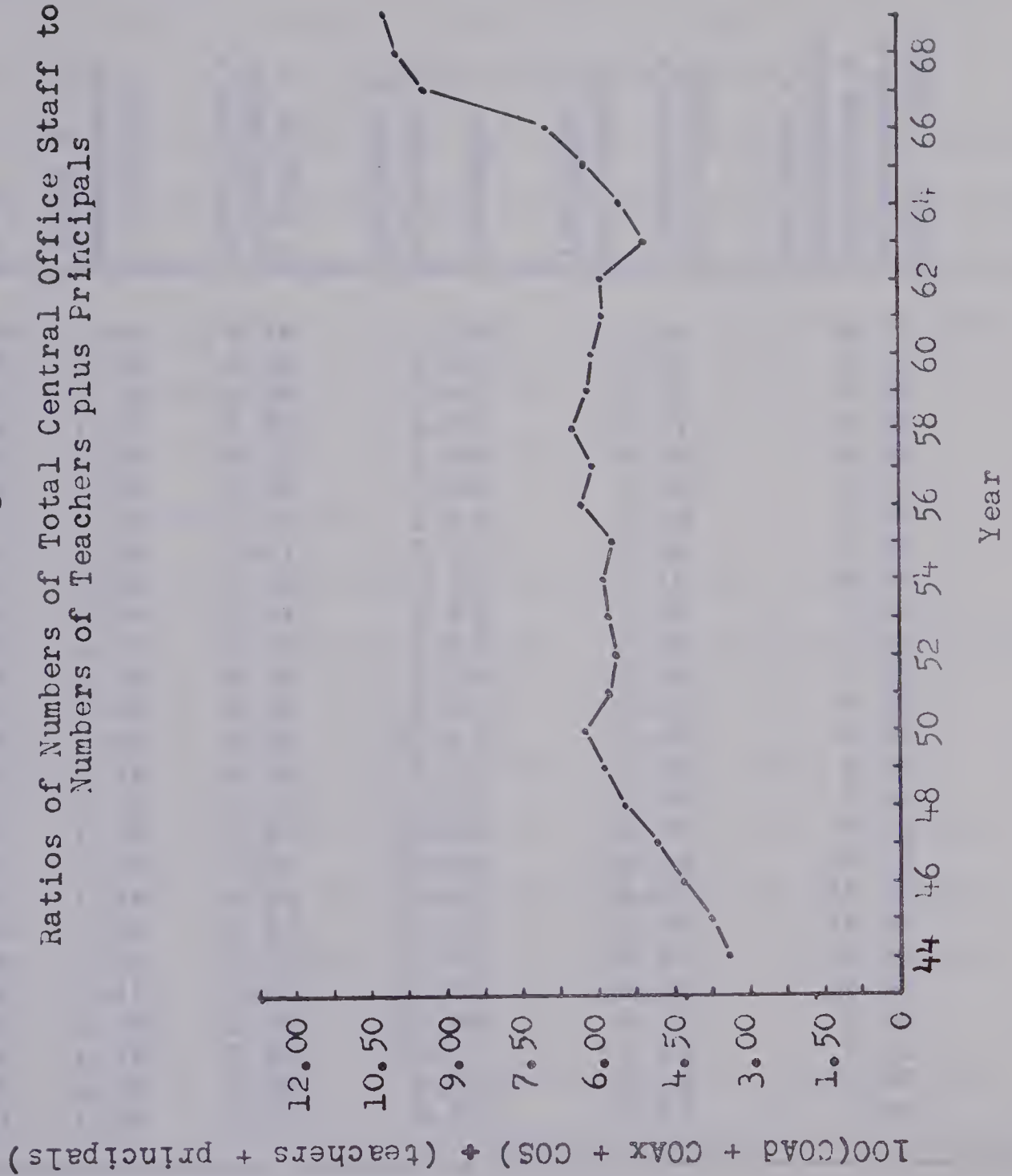


Table 10

Ratios of Numbers of Central Office Administrative Staff
and Principals to Various Measures of District Size

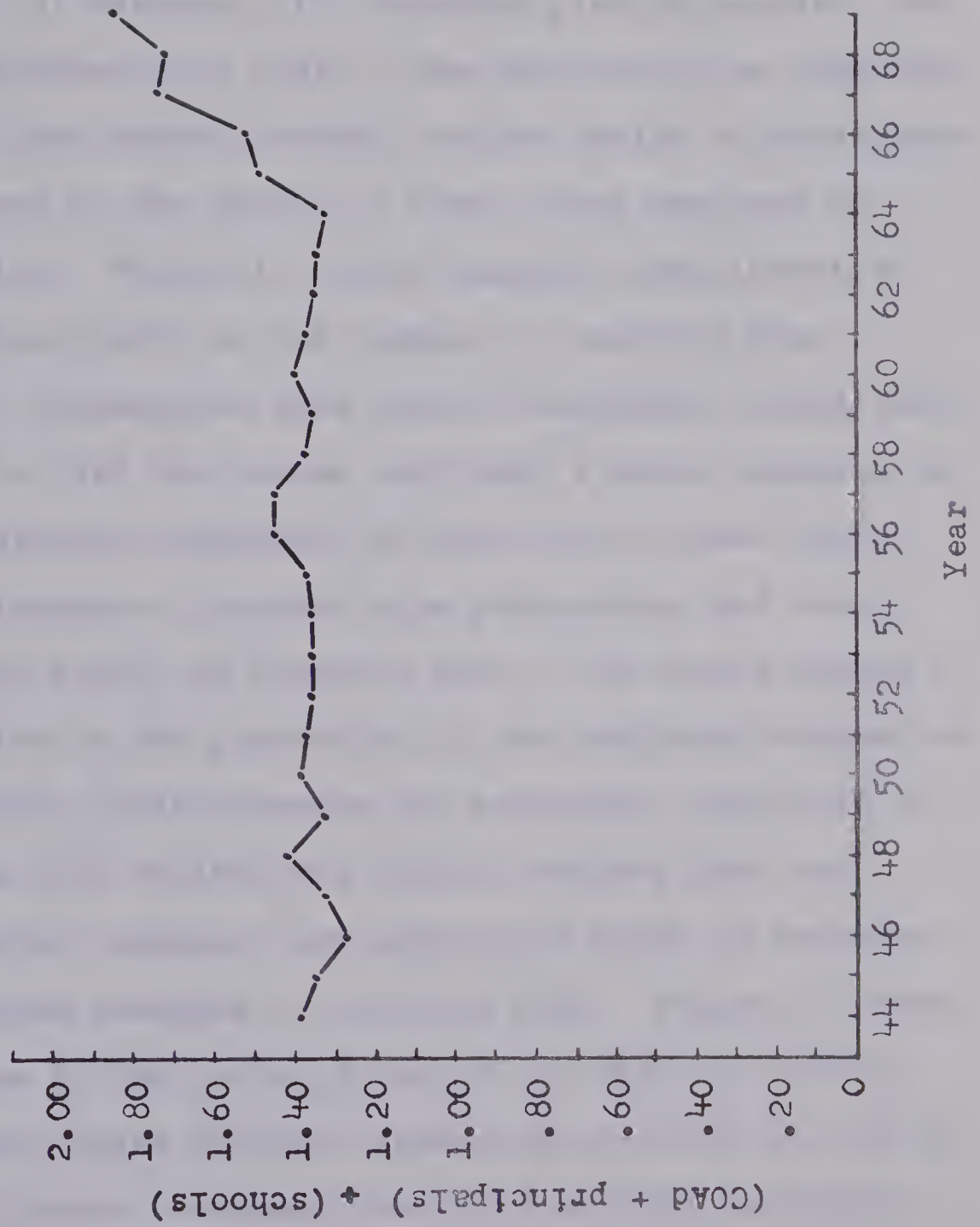
| Year | (COAd + principals) ÷ schools | 1000 (COAd + principals) ÷ pupils | 100 (COAd + principals) ÷ teachers | 100 (COAd + principals) ÷ (teachers + principals) | 100 (COAd + principals) ÷ (teachers + principals + COAd + COAx) |
|------|-------------------------------------|---|--|--|---|
| 1969 | 1.85 | 3.56 | 7.39 | 7.11 | 6.78 |
| 1968 | 1.72 | 3.30 | 7.33 | 7.03 | 6.73 |
| 1967 | 1.74 | 3.28 | 7.47 | 7.17 | 6.88 |
| 1966 | 1.52 | 2.85 | 6.87 | 6.57 | 6.37 |
| 1965 | 1.49 | 2.73 | 6.86 | 6.56 | 6.36 |
| 1964 | 1.32 | 2.50 | 7.59 | 7.18 | 7.01 |
| 1963 | 1.35 | 2.57 | 6.97 | 6.63 | 6.47 |
| 1962 | 1.36 | 2.61 | 7.12 | 6.76 | 6.60 |
| 1961 | 1.38 | 2.69 | 7.51 | 7.12 | 6.93 |
| 1960 | 1.40 | 2.74 | 7.53 | 7.14 | 6.95 |
| 1959 | 1.37 | 2.70 | 7.92 | 7.48 | 7.30 |
| 1958 | 1.38 | 2.79 | 8.59 | 8.09 | 7.87 |
| 1957 | 1.45 | 2.85 | 9.11 | 8.57 | 8.31 |
| 1956 | 1.45 | 3.00 | 10.07 | 9.42 | 9.10 |
| 1955 | 1.38 | 2.86 | 9.69 | 9.05 | 8.79 |
| 1954 | 1.37 | 2.91 | 10.31 | 9.59 | 9.33 |
| 1953 | 1.36 | 2.93 | 10.64 | 9.87 | 9.59 |
| 1952 | 1.37 | 3.05 | 11.29 | 10.43 | 10.12 |
| 1951 | 1.38 | 3.13 | 11.57 | 10.67 | 10.33 |
| 1950 | 1.39 | 3.14 | 11.62 | 10.72 | 10.39 |
| 1949 | 1.33 | 3.17 | 11.92 | 10.94 | 10.63 |
| 1948 | 1.41 | 3.14 | 11.85 | 10.92 | 10.57 |
| 1947 | 1.33 | 2.79 | 10.48 | 9.71 | 9.46 |
| 1946 | 1.28 | 2.65 | 10.17 | 9.43 | 9.21 |
| 1945 | 1.35 | 2.28 | 8.71 | 8.18 | 7.99 |
| 1944 | 1.39 | 2.15 | 8.12 | 7.67 | 7.49 |

The administrative component was one of the basic measures used by Gill (1967) and Blowers (1969) in their attempts to study this question of the size of the administrative unit in educational organizations of different sizes. These two studies, conducted at the University of Alberta, both concluded that larger school districts in Western Canada have proportionally fewer people working in administration than do smaller school districts. The inference from their findings was that as organizations grow their administrative components become proportionally smaller. If one were able to equate cross-sectional research with longitudinal research, this study would be expected to show an inverse relationship between the growth in the administrative component and the growth in the various measures of district size.

The ratios depicting the growth in the numbers of administrative staff and the growth in the numbers of schools in the EPSD show very little variation from 1944 to 1964. After 1964 the administrative component has grown at a faster rate than have the numbers of schools in the district. Figure 13 illustrates this relationship between the growth in the numbers of administrators in the EPSD and the growth in the numbers of schools.

The next series of ratios in Table 10 compares the growth in the numbers of administrative staff in the district to the growth in the numbers of pupils. These figures indicate a slight trend towards an increase in the growth of

Figure 13
 Ratios of Numbers of Central Office Administrative Staff
 plus Principals to Numbers of Schools

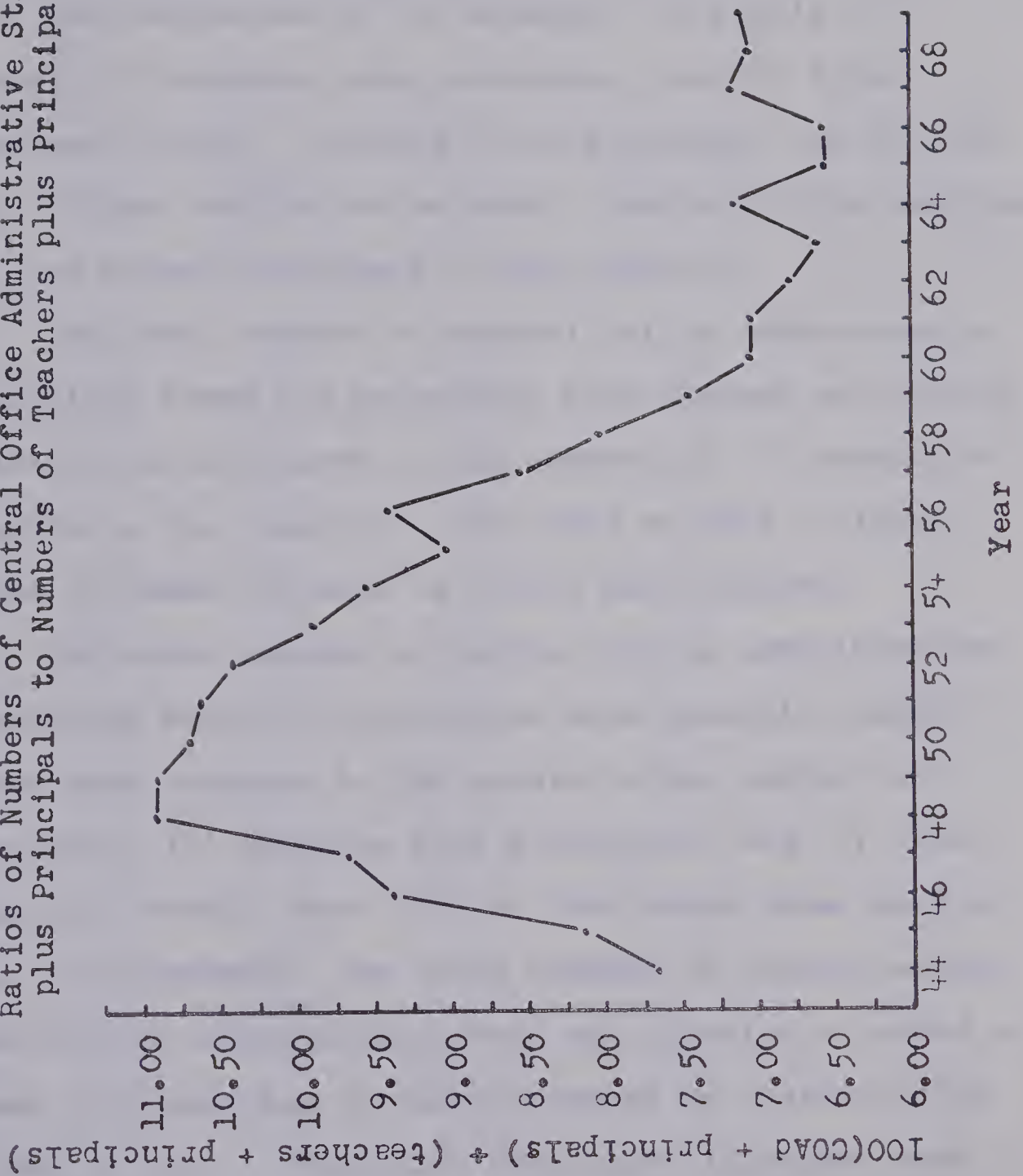


the administrative component in the district. The ratios in this case vary from a low of 2.15 in 1944 to a high of 3.56 in 1969; substantial fluctuation has taken place within this limited range.

The next three sets of ratios describe the relationship between administrative growth and growth in the numbers of (1) teachers, (2) teachers plus principals, and (3) total professional staff. The administrative component appears to have passed through various cycles of development when compared to the growth of these three measures of district size. Figure 14, which compares administrative growth to the growth in the numbers of teachers plus principals, illustrates this cyclic development graphically. From 1944 to 1948 the ratios indicated a sharp increase in the administrative component in relation to these three measures (teachers, teachers plus principals, and total professional staff) of district size. The ratios showed a sharp decline in the proportion of the employees engaged as central office administrators and principals from 1948 to 1966. From 1966 to 1969 the ratios indicate that the administrative component has grown once again in relation to these three measures of district size. Figure 14 shows the increase in the ratios from 7.67 in 1944 to 10.92 in 1948. These ratios declined from 10.92 in 1948 to 6.57 in 1966. The ratios increased from 6.57 in 1966 to 7.11 in 1969.

Figure 14

Ratios of Numbers of Central Office Administrative Staff
plus Principals to Numbers of Teachers plus Principals



Growth of Central Office Administrative and Auxiliary Staff
and Principals

Table 11 presents the ratios which show the relationship between the growth in the numbers of central office administrative and auxiliary staff and principals and the expansion of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers, (4) teachers plus principals, and (5) total professional staff. Included in this category are all the central office administrative staff, central office auxiliary staff, and school principals in the district.

The total numbers of central office administrative and auxiliary staff and principals have changed very little in relation to the growth in the numbers of (1) schools and (2) pupils in the district. From 1964 to 1969 a slight increase in these two sets of ratios were noticed.

The total numbers of central office administrative and auxiliary staff and principals have generally tended to decrease when compared to the growth in the numbers of (1) teachers, (2) teachers plus principals, and (3) total professional staff. From 1944 to 1948 these three sets of ratios all increased. The total numbers of central office administrative and auxiliary staff and principals tended to decrease in proportion to these measures of district size from 1948 to 1965. The ratios have shown increases once again in the period from 1965 to 1969. The growth in the total numbers of central office administrative and auxiliary

Table 11

Ratios of Numbers of Central Office Administrative and
Auxiliary Staff and Principals to Various Measures
of District Size

| Year | (COAd + COAx + principals) ÷ schools | 100 (COAd + principals + COAx) ÷ pupils | 100 (COAd + principals + COAx) ÷ teachers | 100 (COAd + principals + COAx) ÷ (teachers + principals) | 100 (COAd + principals + COAx) ÷ (teachers + principals + COAd + COAx) |
|------|--|--|--|--|---|
| 1969 | 2.25 | 4.32 | 8.96 | 8.62 | 8.23 |
| 1968 | 2.09 | 4.01 | 8.91 | 8.54 | 8.18 |
| 1967 | 2.00 | 3.77 | 8.60 | 8.24 | 7.92 |
| 1966 | 1.74 | 3.27 | 7.88 | 7.54 | 7.30 |
| 1965 | 1.69 | 3.10 | 7.79 | 7.45 | 7.23 |
| 1964 | 1.43 | 2.69 | 8.18 | 7.74 | 7.56 |
| 1963 | 1.49 | 2.84 | 7.71 | 7.33 | 7.16 |
| 1962 | 1.51 | 2.89 | 7.89 | 7.50 | 7.31 |
| 1961 | 1.52 | 2.97 | 8.29 | 7.86 | 7.66 |
| 1960 | 1.54 | 3.01 | 8.29 | 7.86 | 7.65 |
| 1959 | 1.46 | 2.87 | 8.42 | 7.96 | 7.76 |
| 1958 | 1.47 | 2.97 | 9.15 | 8.61 | 8.38 |
| 1957 | 1.52 | 2.99 | 9.55 | 8.99 | 8.72 |
| 1956 | 1.54 | 3.18 | 10.67 | 9.98 | 9.65 |
| 1955 | 1.45 | 3.03 | 10.24 | 9.57 | 9.29 |
| 1954 | 1.40 | 2.98 | 10.57 | 9.82 | 9.56 |
| 1953 | 1.40 | 3.01 | 10.92 | 10.13 | 9.85 |
| 1952 | 1.41 | 3.14 | 11.61 | 10.73 | 10.40 |
| 1951 | 1.43 | 3.23 | 11.92 | 11.00 | 10.65 |
| 1950 | 1.41 | 3.20 | 11.81 | 10.90 | 10.56 |
| 1949 | 1.35 | 3.23 | 12.13 | 11.13 | 10.82 |
| 1948 | 1.43 | 3.20 | 12.07 | 11.13 | 10.77 |
| 1947 | 1.36 | 2.85 | 10.71 | 9.93 | 9.68 |
| 1946 | 1.31 | 2.71 | 10.42 | 9.66 | 9.44 |
| 1945 | 1.38 | 2.34 | 8.96 | 8.41 | 8.22 |
| 1944 | 1.43 | 2.22 | 8.38 | 7.91 | 7.73 |

staff and principals when compared to the growth in the numbers of (1) teachers, (2) teachers plus principals, and (3) total professional staff shows a pattern of cycles similar to those produced by the growth of the administrative component.

Growth of the Central Office Senior Administrative Staff

Table 12 presents the ratios which indicate the relationship between the growth in the numbers of central office senior administrative staff and the growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers plus principals, (4) central office administrative staff, (5) central office auxiliary staff, and (6) total central office staff. The central office senior administrative staff includes the superintendent, deputy superintendent, associate superintendents, assistant superintendents, and the secretary-treasurer.

The growth in the numbers of central office senior administrative staff as compared to the growth in the numbers of schools produced an irregular set of ratios. The range of ratios was small being .47 to .87, and no overall pattern was discernible.

Little overall change has occurred in the ratios between the growth in the numbers of central office senior administrative staff and the growth in the numbers of pupils in the district. The ratios, in this case, range from .10 to .16.

The central office senior administrative staff seems

Table 12

Ratios of Numbers of Central Office Senior Administrative Staff to Various Measures of District Size

| Years | (Senior COAd) ÷ COAx | 1000 (Senior COAd) ÷ pupils | 100 (Senior COAd) ÷ (teachers + principals) | (Senior COAd) ÷ COAd | (Senior COAd) ÷ COAx | (Senior COAd) ÷ (COAd + COAx + COS) |
|-------|----------------------------|-----------------------------------|--|----------------------------|----------------------------|--|
| 1969 | .70 | .14 | .27 | .83 | 1.79 | .27 |
| 1968 | .72 | .14 | .30 | 1.01 | 1.96 | .30 |
| 1967 | .85 | .16 | .35 | 1.15 | 3.24 | .36 |
| 1966 | .56 | .10 | .24 | 1.08 | 2.50 | .35 |
| 1965 | .59 | .11 | .26 | 1.21 | 2.92 | .42 |
| 1964 | .51 | .10 | .28 | 1.58 | 4.29 | .50 |
| 1963 | .51 | .10 | .25 | 1.47 | 3.57 | .48 |
| 1962 | .53 | .10 | .26 | 1.47 | 3.57 | .44 |
| 1961 | .56 | .11 | .29 | 1.47 | 3.85 | .48 |
| 1960 | .59 | .11 | .30 | 1.47 | 4.17 | .49 |
| 1959 | .62 | .12 | .34 | 1.67 | 7.17 | .54 |
| 1958 | .64 | .13 | .37 | 1.67 | 7.17 | .57 |
| 1957 | .70 | .14 | .42 | 1.56 | 10.00 | .68 |
| 1956 | .72 | .15 | .47 | 1.61 | 8.33 | .74 |
| 1955 | .63 | .13 | .41 | 1.67 | 8.00 | .73 |
| 1954 | .67 | .14 | .47 | 1.82 | 20.00 | .78 |
| 1953 | .55 | .12 | .39 | 1.50 | 15.00 | .68 |
| 1952 | .59 | .13 | .45 | 1.58 | 15.00 | .79 |
| 1951 | .64 | .14 | .49 | 1.67 | 15.00 | .86 |
| 1950 | .68 | .15 | .53 | 1.76 | 30.00 | .83 |
| 1949 | .47 | .11 | .38 | 1.43 | 20.00 | .65 |
| 1948 | .54 | .12 | .42 | 1.33 | 20.00 | .77 |
| 1947 | .61 | .13 | .44 | 1.82 | 20.00 | .91 |
| 1946 | .63 | .13 | .46 | 2.22 | 20.00 | 1.05 |
| 1945 | .77 | .13 | .47 | 2.22 | 20.00 | 1.25 |
| 1944 | .87 | .13 | .48 | 2.22 | 20.00 | 1.33 |

to have become proportionally smaller in relation to the growth in the numbers of (1) teachers plus principals, (2) central office administrative staff, and (3) central office auxiliary staff. Although the ratios are irregular in some cases, there is a definite negative trend over the twenty-five year period.

Figure 15 illustrates the relationship between growth in the numbers of central office senior administrative staff and growth in the numbers of total central office staff. The central office senior administrative staff has obviously decreased in proportion to the expansion of the total central office staff.

Growth of the Central Office Intermediate Administrative Staff

Table 13 presents the ratios showing the relationship between the growth in the numbers of central office intermediate administrative staff and the growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers plus principals, (4) central office administrative staff, (5) central office auxiliary staff, and (6) total central office staff. The central office intermediate administrative staff includes all the directors, assistant directors, assistant secretary-treasurers, administrative assistants, and personnel officers working in the district's central office.

The numbers of central office intermediate administrative staff show a generally increasing trend when

Figure 15

Ratios of Numbers of Central Office Senior Administrative
Staff to Numbers of Total Central Office Staff

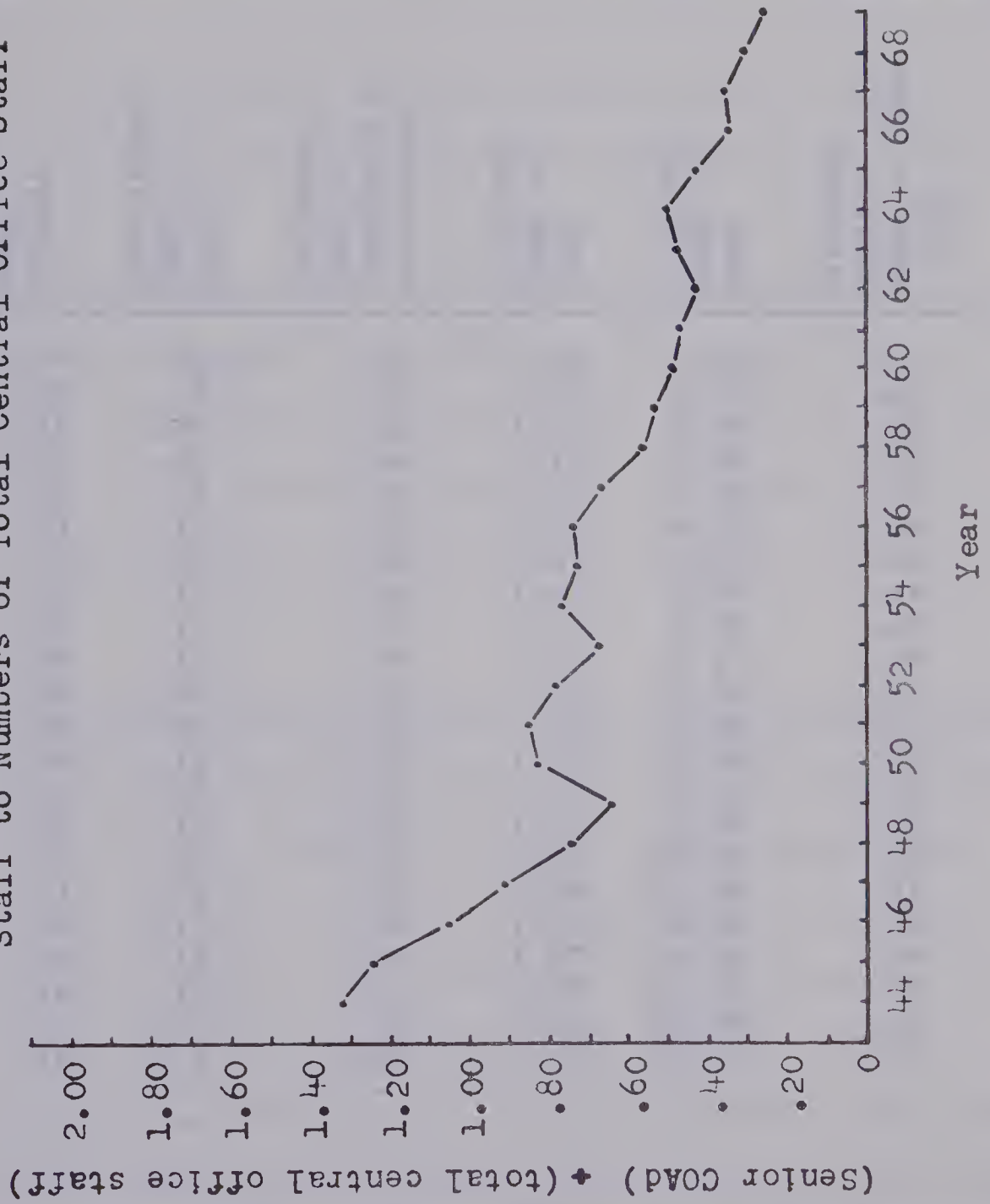


Table 13

Ratios of Numbers of Central Office Intermediate
Administrative Staff of Various Measures
to District Size

| Year | 10 (Inter. COAd) ÷ schools | 1000 (Inter. COAd) ÷ pupils | 100 (Inter. COAd) ÷ (teachers + principals) | 10 (Inter. COAd) ÷ COAd | 10 (Inter. COAd) ÷ COAx | 10 (Inter. COAd) ÷ (COAd + COAx + COS) |
|------|----------------------------------|-----------------------------------|--|-------------------------------|-------------------------------|---|
| 1969 | 1.97 | .38 | .76 | 1.98 | 5.59 | .63 |
| 1968 | 1.45 | .28 | .59 | 2.02 | 3.92 | .60 |
| 1967 | 1.46 | .28 | .60 | 1.98 | 5.59 | .63 |
| 1966 | 1.11 | .21 | .48 | 2.15 | 5.00 | .69 |
| 1965 | 1.02 | .19 | .45 | 2.07 | 5.00 | .71 |
| 1964 | .77 | .15 | .42 | 2.37 | 6.43 | .75 |
| 1963 | .51 | .10 | .25 | 1.47 | 3.57 | .48 |
| 1962 | .53 | .10 | .26 | 1.47 | 3.57 | .44 |
| 1961 | .56 | .11 | .29 | 1.47 | 3.85 | .48 |
| 1960 | .59 | .11 | .30 | 1.47 | 4.17 | .49 |
| 1959 | .25 | .05 | .13 | .67 | 2.86 | .22 |
| 1958 | .26 | .05 | .15 | .67 | 2.86 | .23 |
| 1957 | .56 | .11 | .33 | 1.25 | 8.00 | .54 |
| 1956 | .43 | .09 | .28 | .97 | 8.00 | .44 |
| 1955 | .63 | .13 | .41 | 1.67 | 8.00 | .73 |
| 1954 | .67 | .14 | .47 | 1.82 | 20.00 | .78 |
| 1953 | .73 | .16 | .53 | 2.00 | 20.00 | .91 |
| 1952 | .59 | .13 | .45 | 1.58 | 15.00 | .79 |
| 1951 | .64 | .14 | .49 | 1.67 | 15.00 | .86 |
| 1950 | .68 | .15 | .53 | 1.76 | 30.00 | .83 |
| 1949 | .47 | .11 | .38 | 1.43 | 20.00 | .65 |
| 1948 | .54 | .12 | .42 | 1.33 | 20.00 | .77 |
| 1947 | - | - | - | - | - | - |
| 1946 | - | - | - | - | - | - |
| 1945 | - | - | - | - | - | - |
| 1944 | - | - | - | - | - | - |

compared to the growth in the numbers of (1) schools, (2) pupils, and (3) teachers plus principals. The ratios do, however, show a decreasing trend from 1956 to 1963.

The numbers of central office intermediate administrative staff tended to decrease in relation to the growth of the central office auxiliary staff from 1948 to 1969.

The ratios showing the comparative growth in the numbers of central office intermediate administrative staff and the numbers of (1) central office administrative staff and (2) total central office staff are highly irregular. Figure 16, which compares the growth in the numbers of central office intermediate administrative staff and that of the numbers of total central office staff, indicates that no regular pattern exists in the growth of these two variables.

Growth of the Central Office Supervisory Administrative Staff

The ratios presented in Table 14 show the relationship between growth in the numbers of central office supervisory administrative staff and growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers plus principals, (4) central office supervisory administrative staff, (5) central office auxiliary staff, and (6) total central office staff. The central office administrative staff includes all the supervisors, assistant supervisors, and coordinators employed in the central office of the EPSD.

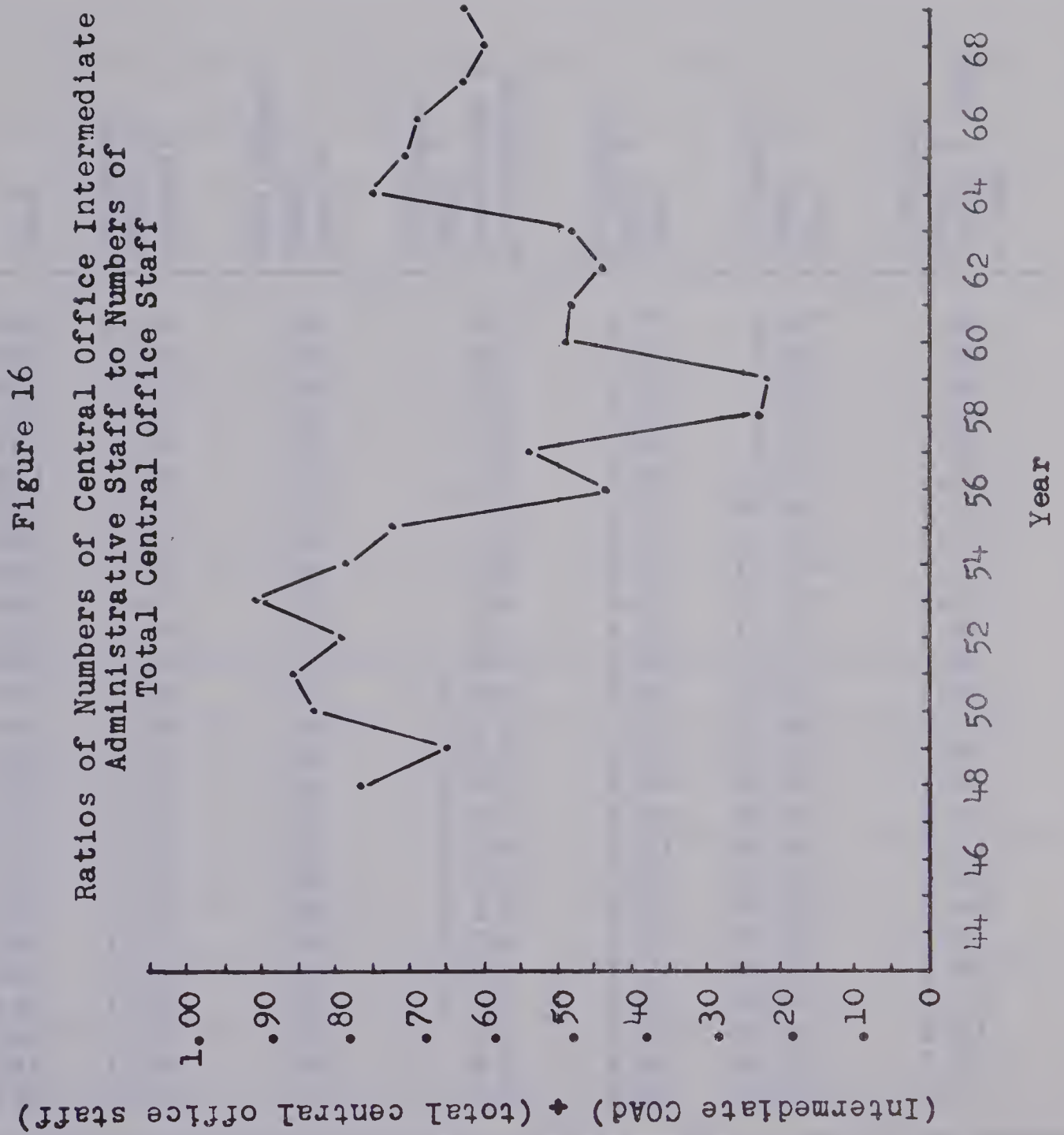


Table 14

Ratios of Numbers of Central Office Supervisory
Administrative Staff to Various Measures
of District Size

| Year | 10 (Super. COAd) ÷ schools | 1000 (Super. COAd) ÷ pupils | 100 (Super. COAd) ÷ (teachers + principals) | 10 (Super. COAd) COAd | 10 (Super. COAd) ÷ COAX | 10 (Super. COAd) ÷ (COAd + COAX + COS) |
|------|----------------------------------|-----------------------------------|--|-----------------------------|-------------------------------|---|
| 1969 | 2.00 | .38 | .82 | 2.71 | 6.07 | .90 |
| 1968 | 2.10 | .40 | .86 | 2.93 | 5.69 | .87 |
| 1967 | 2.00 | .38 | .82 | 2.71 | 7.65 | .86 |
| 1966 | 1.90 | .36 | .83 | 3.69 | 8.57 | 1.19 |
| 1965 | 1.78 | .33 | .78 | 3.62 | 8.75 | 1.25 |
| 1964 | 1.20 | .23 | .65 | 3.68 | 10.00 | 1.17 |
| 1963 | 1.43 | .27 | .70 | 4.12 | 10.00 | 1.35 |
| 1962 | 1.47 | .28 | .73 | 4.12 | 10.00 | 1.23 |
| 1961 | 1.56 | .30 | .80 | 4.12 | 10.77 | 1.35 |
| 1960 | 1.65 | .32 | .84 | 4.12 | 11.67 | 1.37 |
| 1959 | 1.48 | .29 | .81 | 4.00 | 17.17 | 1.30 |
| 1958 | 1.54 | .31 | .90 | 4.00 | 17.17 | 1.36 |
| 1957 | 1.69 | .33 | 1.00 | 3.75 | 24.00 | 1.62 |
| 1956 | 1.74 | .36 | 1.13 | 3.87 | 20.00 | 1.76 |
| 1955 | 1.72 | .36 | 1.13 | 4.58 | 22.00 | 2.00 |
| 1954 | 1.50 | .32 | 1.05 | 4.09 | 45.00 | 1.76 |
| 1953 | 1.45 | .31 | 1.05 | 4.00 | 40.00 | 1.82 |
| 1952 | 1.57 | .35 | 1.19 | 4.21 | 40.00 | 2.11 |
| 1951 | 1.49 | .34 | 1.15 | 3.89 | 35.00 | 2.00 |
| 1950 | 1.59 | .36 | 1.23 | 4.12 | 70.00 | 1.94 |
| 1949 | 1.63 | .39 | 1.34 | 5.00 | 70.00 | 2.26 |
| 1948 | 2.16 | .48 | 1.68 | 5.33 | 80.00 | 3.08 |
| 1947 | 1.82 | .38 | 1.32 | 5.45 | 60.00 | 2.73 |
| 1946 | 1.25 | .26 | .92 | 4.44 | 40.00 | 2.11 |
| 1945 | 1.54 | .26 | .93 | 4.44 | 40.00 | 2.50 |
| 1944 | 1.74 | .27 | .96 | 4.44 | 40.00 | 2.67 |

A slight overall increase in the numbers of central office supervisory administrative staff is indicated by the ratios which compare these figures with (1) those showing the growth in the numbers of schools and (2) those showing the growth in the numbers of pupils. Both of the above sets of ratios indicate many irregularities as well as very small ranges.

The central office supervisory administrative staff has decreased proportionally when compared to the growth in the numbers of (1) teachers plus principals, (2) central office administrative staff, (3) central office auxiliary staff, and (4) total central office staff. Figure 17, which compares central office supervisory administrative growth to that of the central office staff, indicates the proportional decrease in the numbers of central office supervisory administrative staff over the past twenty-five years.

Growth of the Central Office Service Administrative Staff

Presented in Table 15 are the ratios which show the relationship between the growth in the numbers of central office service administrative staff and growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers plus principals, (4) central office administrative staff, (5) central office auxiliary staff, and (6) total central office staff. The central office service administrative staff is made up of all the purchase planners, equipment technologists, and requisition controllers in addition to any directors, assistant directors,

Figure 17

Ratios of Numbers of Central Office Supervisory
Administrative Staff to Numbers of
Total Central Office Staff

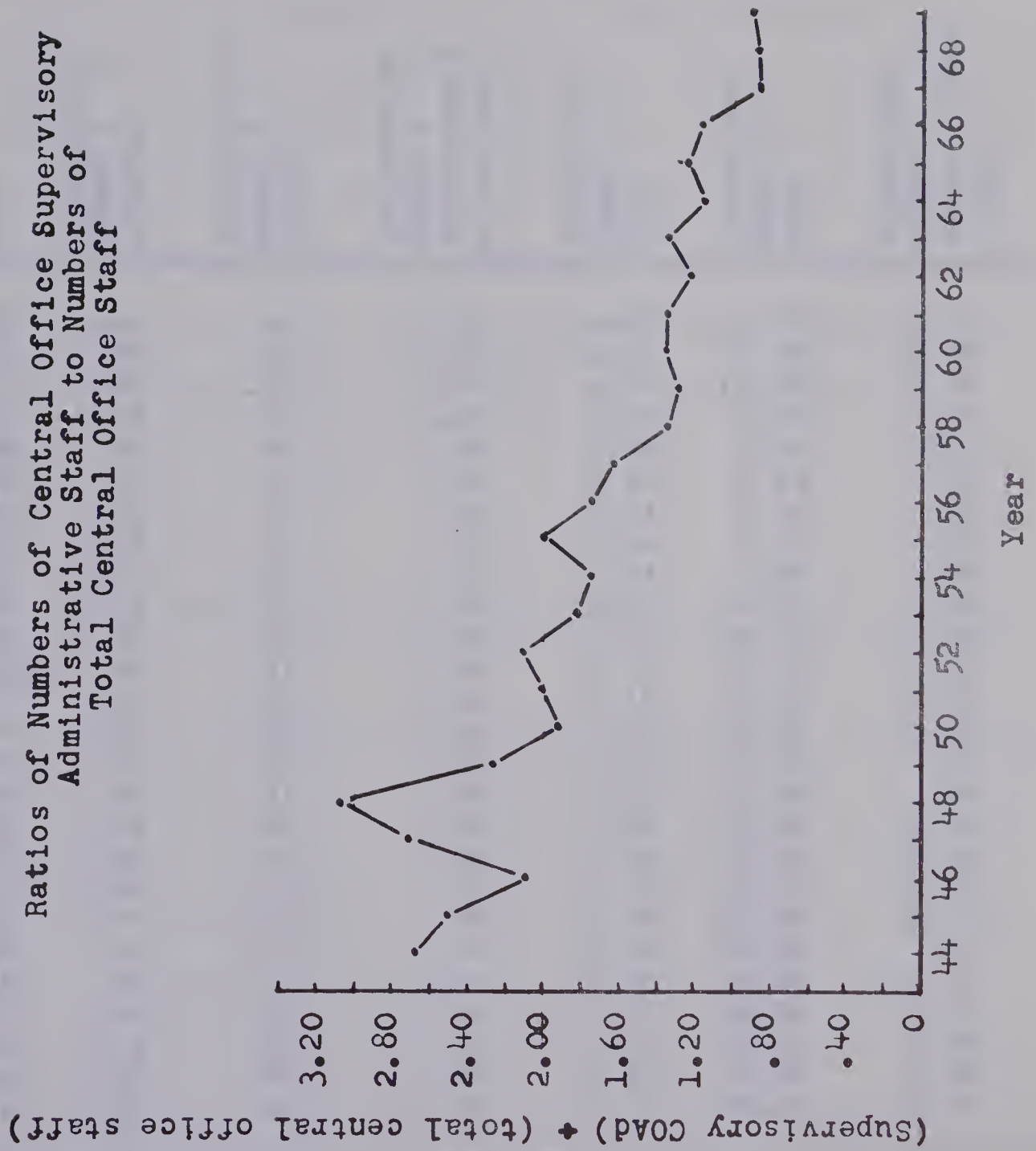


Table 15

Ratios of Numbers of Central Office Service Administrative Staff to Various Measures of District Size

| Year | 10 (Service COAd) ÷ schools | 1000 (Service COAd) ÷ pupils | 100 (Service COAd) ÷ (teachers + principals) | 10 (Service COAd) ÷ COAd | 10 (Service COAd) ÷ COAx | 10 (Service COAd) ÷ (COAd + COAx + COS) |
|------|-----------------------------------|------------------------------------|---|--------------------------------|--------------------------------|--|
| 1969 | 3.45 | .66 | 1.32 | 4.05 | 8.75 | 1.30 |
| 1968 | 2.90 | .56 | 1.19 | 4.04 | 7.84 | 1.20 |
| 1967 | 3.08 | .58 | 1.27 | 4.17 | 11.76 | 1.32 |
| 1966 | 1.59 | .30 | .69 | 3.08 | 7.14 | .99 |
| 1965 | 1.53 | .28 | .67 | 3.10 | 7.50 | 1.07 |
| 1964 | .77 | .15 | .42 | 2.37 | 6.43 | .75 |
| 1963 | 1.02 | .19 | .50 | 2.94 | 7.14 | .96 |
| 1962 | 1.05 | .20 | .52 | 2.94 | 7.14 | .88 |
| 1961 | 1.11 | .22 | .57 | 2.94 | 7.69 | .96 |
| 1960 | 1.18 | .23 | .60 | 2.94 | 8.33 | .98 |
| 1959 | 1.36 | .27 | .74 | 3.67 | 15.71 | 1.20 |
| 1958 | 1.41 | .28 | .82 | 3.67 | 15.71 | 1.25 |
| 1957 | 1.55 | .30 | .92 | 3.44 | 22.00 | 1.49 |
| 1956 | 1.59 | .33 | 1.04 | 3.55 | 18.33 | 1.62 |
| 1955 | .78 | .16 | .51 | 2.08 | 10.00 | .91 |
| 1954 | .83 | .18 | .58 | 2.27 | 25.00 | .98 |
| 1953 | .91 | .20 | .66 | 2.50 | 25.00 | 1.14 |
| 1952 | .98 | .22 | .75 | 2.63 | 25.00 | 1.32 |
| 1951 | 1.06 | .24 | .82 | 2.78 | 25.00 | 1.43 |
| 1950 | .91 | .21 | .70 | 2.35 | 40.00 | 1.11 |
| 1949 | .70 | .17 | .58 | 2.14 | 30.00 | .97 |
| 1948 | .81 | .18 | .63 | 2.00 | 30.00 | 1.15 |
| 1947 | .91 | .19 | .66 | 2.73 | 30.00 | 1.36 |
| 1946 | .94 | .19 | .69 | 3.33 | 30.00 | 1.58 |
| 1945 | 1.15 | .20 | .70 | 3.33 | 30.00 | 1.88 |
| 1944 | 1.30 | .20 | .72 | 3.33 | 30.00 | 2.00 |

supervisors, or assistant supervisors, who are involved primarily with building or maintenance.

The numbers of central office service administrative staff have tended to increase when compared to the growth in the numbers of (1) schools, (2) pupils, (3) teachers plus principals, and (4) central office administrative staff.

The total numbers of central office service administrative staff have tended to decrease in relation to the growth in the numbers of central office auxiliary staff.

Figure 18 compares the growth in the total numbers of central office service administrative staff to the growth in the numbers of total central office staff. There are so many fluctuations in the graph that no real pattern of relative increases or decreases are evident for the twenty-five year period.

Growth of the Central Office Auxiliary Staff Concerned With Pupils

Table 16 presents the ratios showing the relationship between the growth in the numbers of central office auxiliary staff concerned with pupils and the growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers plus principals, (4) central administrative staff, (5) central auxiliary staff, and (6) total central office staff. The central office auxiliary staff concerned with pupils refers to all psychologists, social workers, speech therapists, remedial clinicians, and attendance officers working in the district.

Figure 18

Ratios of Numbers of Central Office Service Administrative Staff to Numbers of Total Central Office Staff

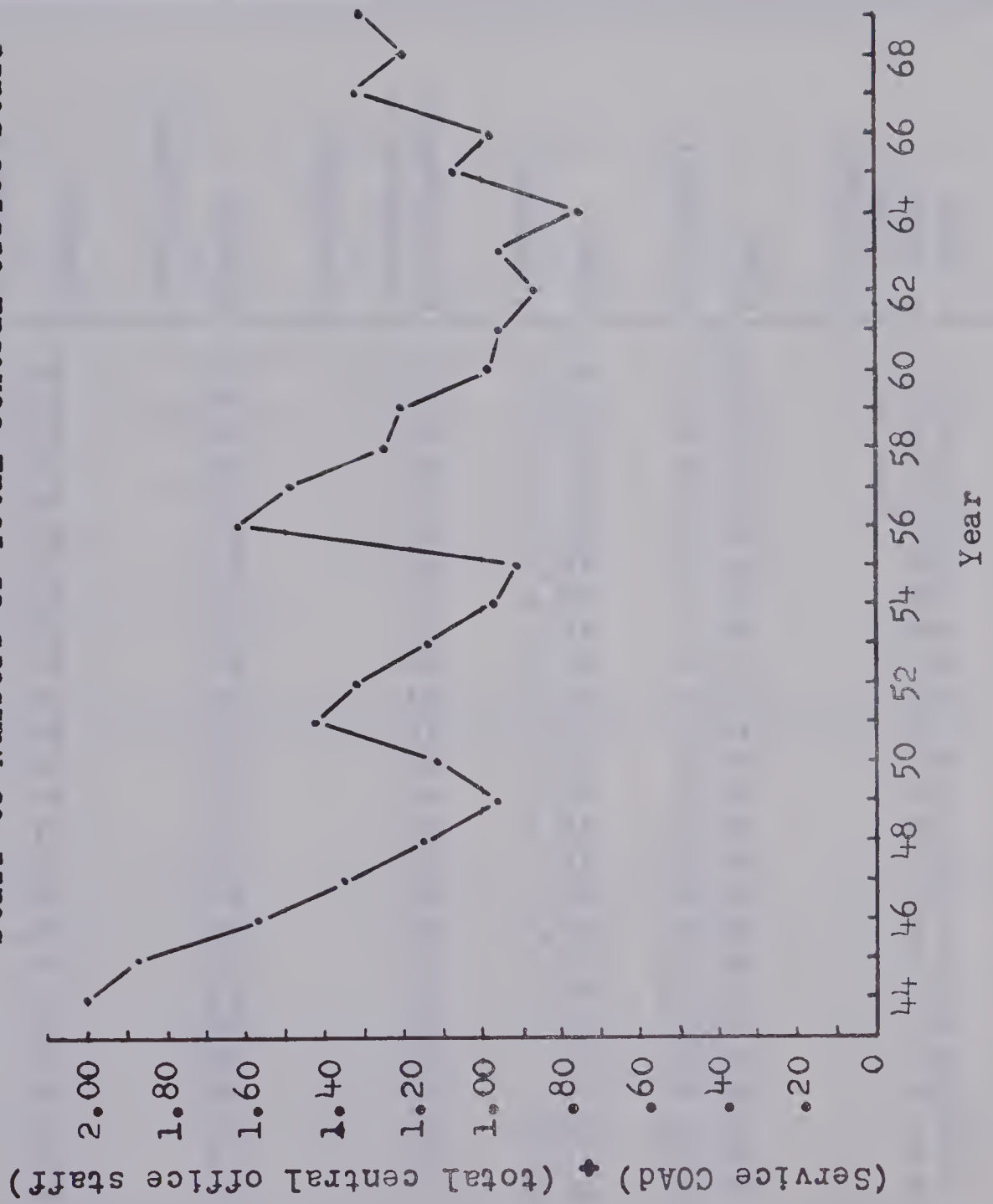


Table 16

Ratios of Numbers of Central Office Auxiliary Staff
Concerned with Pupils to Various Measures of
District Size

| Year | 10 (COAxP) ÷ schools | 1000 (COAxP) ÷ pupils | 100 (COAxP) ÷ (teachers + principals) | 10 (COAxP) ÷ COAd | 10 (COAxP) ÷ COAx | 10 (COAxP) ÷ (COAx + COAd + COS) |
|------|----------------------------|-----------------------------|--|-------------------------|-------------------------|--|
| 1969 | 2.68 | .51 | 1.03 | 3.14 | 6.79 | 1.01 |
| 1968 | 2.54 | .49 | 1.04 | 3.54 | 6.86 | 1.05 |
| 1967 | 2.15 | .41 | .89 | 2.92 | 8.24 | .93 |
| 1966 | 1.83 | .34 | .79 | 3.54 | 8.21 | 1.14 |
| 1965 | 1.69 | .31 | .75 | 3.45 | 8.33 | 1.19 |
| 1964 | .94 | .18 | .51 | 2.89 | 7.86 | .92 |
| 1963 | 1.02 | .19 | .50 | 2.94 | 7.14 | .96 |
| 1962 | 1.05 | .20 | .52 | 2.94 | 7.14 | .88 |
| 1961 | 1.11 | .22 | .57 | 2.94 | 7.69 | .96 |
| 1960 | .94 | .18 | .48 | 2.35 | 6.67 | .78 |
| 1959 | .74 | .15 | .40 | 2.00 | 8.57 | .65 |
| 1958 | .64 | .13 | .37 | 1.67 | 7.14 | .57 |
| 1957 | .56 | .11 | .33 | 1.25 | 8.00 | .54 |
| 1956 | .58 | .12 | .38 | 1.29 | 6.67 | .59 |
| 1955 | .78 | .16 | .51 | 2.08 | 10.00 | .91 |
| 1954 | .33 | .07 | .23 | .91 | 10.00 | .39 |
| 1953 | .36 | .08 | .26 | 1.00 | 10.00 | .45 |
| 1952 | .39 | .09 | .30 | 1.05 | 10.00 | .53 |
| 1951 | .43 | .10 | .33 | 1.11 | 10.00 | .57 |
| 1950 | .23 | .05 | .18 | .59 | 10.00 | .28 |
| 1949 | .23 | .06 | .19 | .71 | 10.00 | .32 |
| 1948 | .27 | .06 | .21 | .67 | 10.00 | .38 |
| 1947 | .30 | .06 | .22 | .91 | 10.00 | .45 |
| 1946 | .31 | .06 | .23 | 1.11 | 10.00 | .53 |
| 1945 | .38 | .07 | .23 | 1.11 | 10.00 | .63 |
| 1944 | .43 | .07 | .24 | 1.11 | 10.00 | .67 |

The central office auxiliary staff concerned with pupils has tended to increase when compared to the growth in the numbers of (1) schools, (2) pupils, (3) teachers plus principals, (4) central office administrative staff, and (5) total central office staff. Figure 19 indicates that the numbers of central office auxiliary staff concerned with pupils has tended to increase in relation to the growth in the numbers of pupils.

Since the central office auxiliary staff concerned with pupils represented the entire central office auxiliary staff from 1944 to 1955, the ratios comparing these two categories are only meaningful from 1956 to 1969. The ratios comparing the growth in the numbers of central office auxiliary staff concerned with pupils to the growth in the numbers of total central office auxiliary staff show no real pattern from 1956 to 1969.

Growth of the Central Office Auxiliary Staff Concerned with Teachers

Table 17 presents the ratios depicting the relationship between the central office auxiliary staff concerned with teachers and the growth of the district as measured by the numbers of each of the categories of (1) schools, (2) pupils, (3) teachers plus principals, (4) central office administrative staff, (5) central office auxiliary staff, and (6) total central office staff. The central office auxiliary staff concerned with teachers refers to all the subject consultants

Figure 19
 Ratios of Numbers of Central Office Auxiliary Staff
 Concerned with Pupils to the Numbers of Pupils

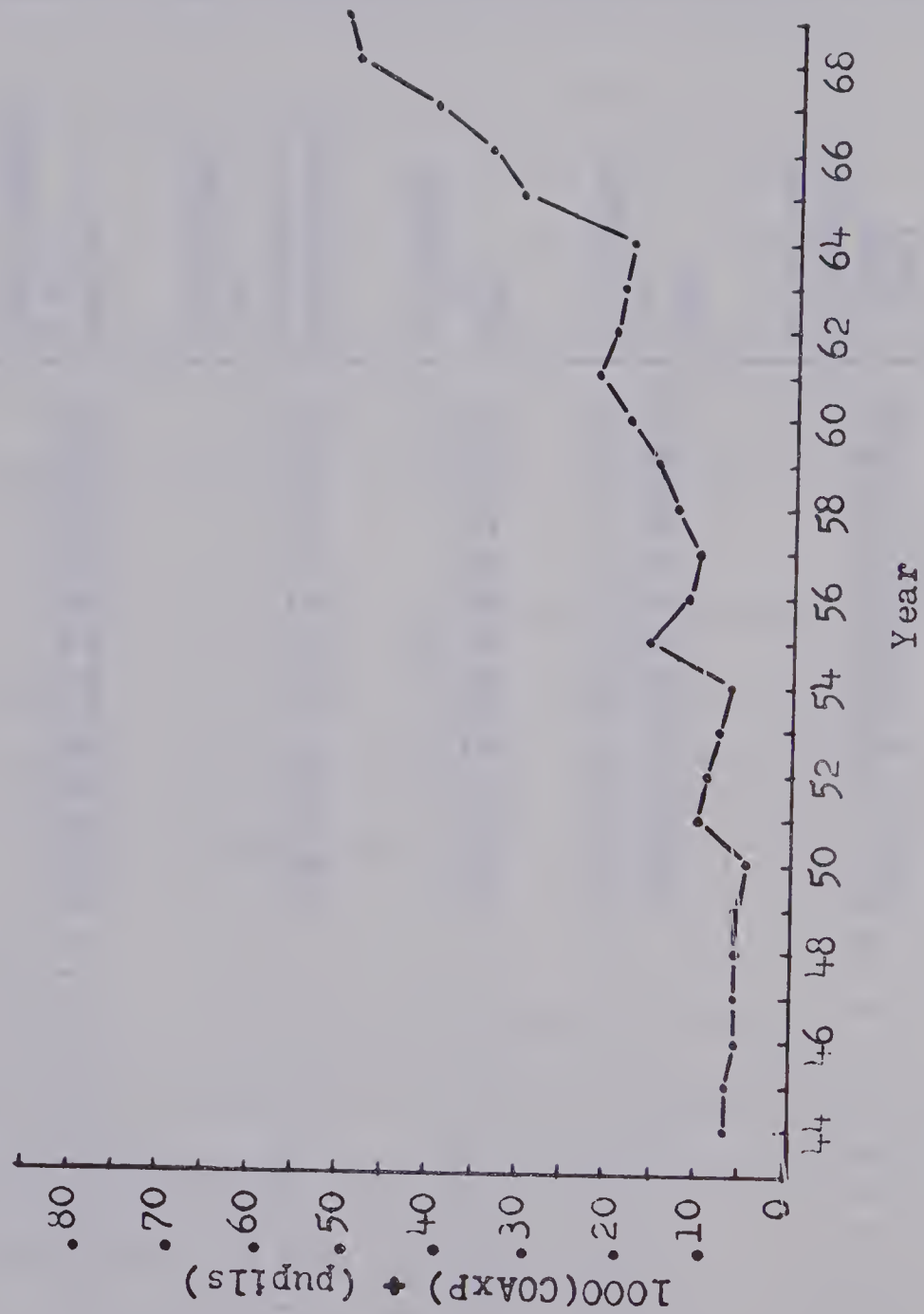


Table 17

Ratios of Numbers of Central Office Auxiliary Staff
Concerned with Teachers to Various Measures of
District Size

| Year | 10 (COAxT) ÷ schools | 1000 (COAxT) ÷ pupils | 100 (COAxT) ÷ (teachers + principals) | 10 (COAxT) ÷ COAd | 10 (COAxT) ÷ COAx | 10 (COAxT) ÷ (COAd + COAx + COS) |
|------|----------------------------|-----------------------------|--|-------------------------|-------------------------|--|
| 1969 | 1.27 | .24 | .49 | 1.49 | 3.12 | .48 |
| 1968 | 1.16 | .22 | .47 | 1.62 | 3.14 | .48 |
| 1967 | .46 | .09 | .19 | .63 | 1.76 | .20 |
| 1966 | .40 | .07 | .17 | .77 | 1.79 | .25 |
| 1965 | .34 | .06 | .15 | .69 | 1.67 | .24 |
| 1964 | .26 | .05 | .14 | .79 | 2.14 | .25 |
| 1963 | .41 | .08 | .20 | 1.18 | 2.86 | .38 |
| 1962 | .42 | .08 | .21 | 1.18 | 2.86 | .35 |
| 1961 | .33 | .07 | .17 | .88 | 2.31 | .29 |
| 1960 | .47 | .09 | .24 | 1.18 | 3.33 | .39 |
| 1959 | .12 | .02 | .07 | .33 | 1.43 | .11 |
| 1958 | .26 | .05 | .15 | .67 | 2.86 | .23 |
| 1957 | .14 | .03 | .08 | .31 | 2.00 | .14 |
| 1956 | .29 | .06 | .19 | .65 | 3.33 | .29 |
| 1955 | - | - | - | - | - | - |
| 1954 | - | - | - | - | - | - |
| 1953 | - | - | - | - | - | - |
| 1952 | - | - | - | - | - | - |
| 1951 | - | - | - | - | - | - |
| 1950 | - | - | - | - | - | - |
| 1949 | - | - | - | - | - | - |
| 1948 | - | - | - | - | - | - |
| 1947 | - | - | - | - | - | - |
| 1946 | - | - | - | - | - | - |
| 1945 | - | - | - | - | - | - |
| 1944 | - | - | - | - | - | - |

in the EPSD.

The central office auxiliary staff concerned with teachers has tended to increase over the past thirteen years (1956-1969) when compared to the growth in the numbers of (1) schools, (2) pupils, (3) teachers plus principals, (4) central office administrative staff, and (5) total central office staff. Prior to 1956 there was no one classified as central office auxiliary staff concerned with teachers. Figure 20 compares the growth in the numbers of central office auxiliary staff concerned with teachers to the growth in the numbers of teachers in the district. Like the ratios referred to above, this graph indicates a comparative increase in the numbers of central office auxiliary staff concerned with teachers.

The ratios which show the relationship between the growth in the numbers of central office auxiliary staff concerned with teachers and the growth in the numbers of total central office auxiliary staff show no pattern.

Summary of Chapter 4

This chapter has described a number of ratios obtained by comparing the growth of certain components of the district to the expansion of the entire EPSD as well as to the growth of other parts of the district.

By way of summarizing the relative growth patterns of many of the district's components two tables were presented to review some of the more important ratios. Table 18 presents the ratios showing the relationship between

Figure 20

Ratios of Numbers of Central Office Auxiliary Staff
Concerned with Teachers to the Numbers of Teachers

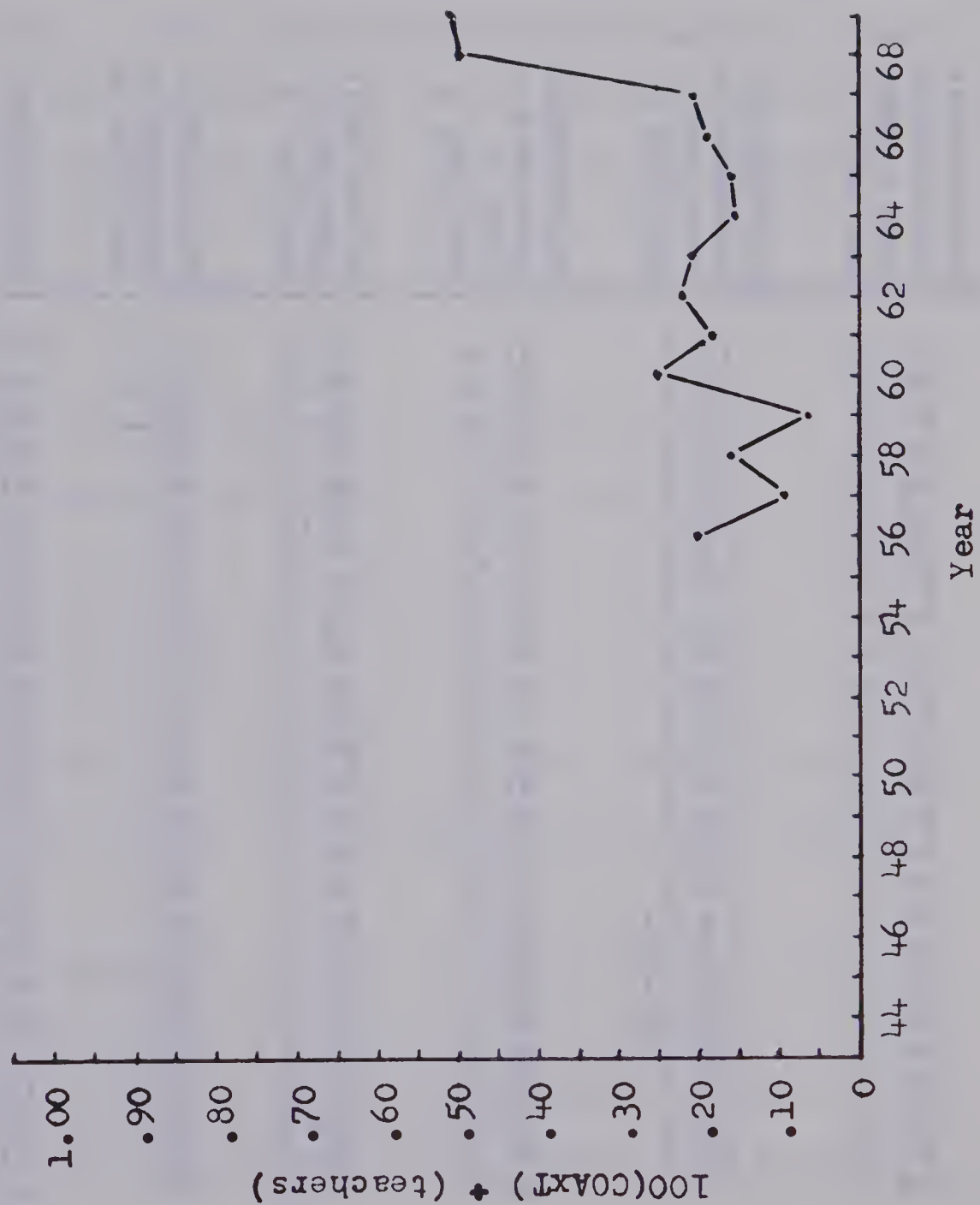


Table 18

Ratios of Numbers of Administrative and Central Office
Components to Numbers of Teachers plus Principals

| Year | $\frac{100(\text{COAd})}{(\text{teachers} + \text{principals})}$ | $\frac{100(\text{COAx})}{(\text{teachers} + \text{principals})}$ | $\frac{100(\text{COS})}{(\text{teachers} + \text{principals})}$ | $\frac{100(\text{COAd} + \text{COAx})}{(\text{teachers} + \text{principals})}$ | $\frac{100(\text{COAd} + \text{principals})}{(\text{teachers} + \text{principals})}$ | $\frac{100(\text{COAd} + \text{COAx} + \text{COS})}{(\text{teachers} + \text{principals})}$ |
|------|--|--|---|--|--|---|
| 1969 | 3.27 | 1.51 | 5.40 | 4.78 | 7.11 | 10.19 |
| 1968 | 2.94 | 1.51 | 5.40 | 4.45 | 7.03 | 9.85 |
| 1967 | 3.04 | 1.08 | 5.45 | 4.12 | 7.17 | 9.58 |
| 1966 | 2.24 | .96 | 3.75 | 3.20 | 6.57 | 6.95 |
| 1965 | 2.16 | .89 | 3.20 | 3.06 | 6.56 | 6.26 |
| 1964 | 1.76 | .65 | 3.15 | 2.41 | 7.18 | 5.56 |
| 1963 | 1.71 | .70 | 2.76 | 2.41 | 6.63 | 5.22 |
| 1962 | 1.78 | .73 | 3.41 | 2.52 | 6.76 | 5.98 |
| 1961 | 1.95 | .75 | 3.27 | 2.70 | 7.12 | 5.97 |
| 1960 | 2.04 | .72 | 3.36 | 2.76 | 7.14 | 6.12 |
| 1959 | 2.02 | .47 | 3.71 | 2.49 | 7.48 | 6.20 |
| 1958 | 2.25 | .52 | 3.82 | 2.77 | 8.09 | 6.59 |
| 1957 | 2.66 | .42 | 3.08 | 3.08 | 8.57 | 6.16 |
| 1956 | 2.92 | .56 | 2.92 | 3.48 | 9.42 | 6.40 |
| 1955 | 2.47 | .51 | 2.67 | 2.98 | 9.05 | 5.66 |
| 1954 | 2.57 | .23 | 3.16 | 2.81 | 9.59 | 5.96 |
| 1953 | 2.63 | .26 | 2.89 | 2.89 | 9.87 | 5.79 |
| 1952 | 2.83 | .30 | 2.53 | 3.13 | 10.43 | 5.66 |
| 1951 | 2.96 | .33 | 2.46 | 3.28 | 10.67 | 5.75 |
| 1950 | 2.99 | .18 | 3.16 | 3.16 | 10.72 | 6.33 |
| 1949 | 2.69 | .19 | 3.07 | 2.88 | 10.94 | 5.95 |
| 1948 | 3.15 | .21 | 2.10 | 3.36 | 10.92 | 5.46 |
| 1947 | 2.43 | .22 | 2.21 | 2.65 | 9.71 | 4.86 |
| 1946 | 2.07 | .23 | 2.07 | 2.30 | 9.43 | 4.37 |
| 1945 | 2.10 | .23 | 1.40 | 2.34 | 8.18 | 3.74 |
| 1944 | 2.16 | .24 | 1.20 | 2.40 | 7.67 | 3.60 |

the growth in the numbers of (1) central office administrative staff, (2) central office auxiliary staff, (3) central office support staff, (4) central office administrative and auxiliary staff, (5) total central office staff, and (6) administrative component and the growth in the numbers of teachers plus principals. With the exception of the administrative component, all of the components described in Table 18 have grown faster than the district, as measured by the numbers of teachers plus principals. The administrative component (central office administrative staff plus principals) developed in the cyclic pattern described previously in this chapter.

Table 19 presents the ratios which show the relationship between the growth in the components listed above and the growth in the numbers of schools. Without exception all ratios indicate relative increases in the various components. That is, all six components of the district described in Table 19 have grown more quickly than the numbers of schools in the EPSD over the past twenty-five years.

The comparative growth of four different groups (senior, intermediate, supervisory, and service) of central office administrative staff are presented in Tables 12, 13, 14, and 15. Both the central office senior and central office supervisory administrative staff tended to decrease in relation to most measures of district size. The numbers of central office service administrative staff tended to

Table 19

Ratios of Numbers of Administrative and Central Office
Components to Numbers of Schools

| Year | COAd ÷ schools | COAx ÷ schools | COS ÷ schools | (COAd + COAx) ÷ schools | (COAd + COAx + COS) ÷ schools | (COAd + principals) ÷ schools |
|------|----------------------|----------------------|---------------------|----------------------------------|--|--|
| 1969 | .85 | .39 | 1.41 | 1.25 | 2.65 | 1.85 |
| 1968 | .72 | .37 | 1.32 | 1.09 | 2.41 | 1.72 |
| 1967 | .74 | .26 | 1.32 | 1.00 | 2.32 | 1.74 |
| 1966 | .52 | .22 | .87 | .74 | 1.60 | 1.52 |
| 1965 | .49 | .20 | .73 | .69 | 1.42 | 1.49 |
| 1964 | .32 | .12 | .58 | .44 | 1.03 | 1.32 |
| 1963 | .35 | .14 | .56 | .49 | 1.06 | 1.35 |
| 1962 | .36 | .15 | .68 | .51 | 1.20 | 1.36 |
| 1961 | .38 | .14 | .63 | .52 | 1.16 | 1.38 |
| 1960 | .40 | .14 | .66 | .54 | 1.20 | 1.40 |
| 1959 | .37 | .09 | .68 | .46 | 1.14 | 1.37 |
| 1958 | .38 | .09 | .65 | .47 | 1.13 | 1.38 |
| 1957 | .45 | .07 | .52 | .52 | 1.04 | 1.45 |
| 1956 | .45 | .09 | .45 | .54 | .99 | 1.45 |
| 1955 | .38 | .08 | .41 | .45 | .86 | 1.38 |
| 1954 | .37 | .03 | .45 | .40 | .85 | 1.37 |
| 1953 | .36 | .04 | .40 | .40 | .80 | 1.36 |
| 1952 | .37 | .04 | .33 | .41 | .75 | 1.37 |
| 1951 | .38 | .04 | .32 | .43 | .74 | 1.38 |
| 1950 | .39 | .02 | .41 | .41 | .82 | 1.39 |
| 1949 | .33 | .02 | .37 | .35 | .72 | 1.33 |
| 1948 | .41 | .03 | .27 | .43 | .70 | 1.41 |
| 1947 | .33 | .03 | .30 | .36 | .67 | 1.33 |
| 1946 | .28 | .03 | .28 | .31 | .59 | 1.28 |
| 1945 | .35 | .04 | .23 | .38 | .62 | 1.35 |
| 1944 | .39 | .04 | .22 | .43 | .65 | 1.39 |

increase when compared to the growth in the numbers of most measures of district size. The ratios comparing growth in the numbers of central office intermediate administrative staff and growth in the numbers of most measures of district size were extremely irregular with no definite pattern of increase or decrease.

The ratios depicting the comparative growth of both parts of the central office auxiliary staff (those concerned with pupils and those concerned with teachers) shown in Tables 16 and 17, indicated that both components have increased at a greater rate than have the various measures of district size.

Chapter 5

SUMMARY AND CONCLUSIONS

As a longitudinal examination of the Edmonton Public School District, this study is an extension of the primarily cross-sectional research previously conducted by Gill (1967) and Blowers (1969) in this area relating to administrative size in educational organizations.

The Problem

The main purpose of this research was to identify the growth relationships between various measures of an educational organization and some of its components. The district was examined over a twenty-five year period (1944-1969).

Examination of the Problem

The total numbers of schools, pupils, teachers, principals, and central office staff in the district for the twenty-five year period were collected. The central office staff was further subdivided into various administrative, auxiliary, and support categories. These raw data were presented in both tabular and graphic form in Chapter 2.

By means of ratios, the growth of thirteen separate components of the district were compared to various measures

of size of the entire EPSD. Many of these ratios were presented in tabular form; some of the more important ratios were also described in graphic form.

Summary and Discussion of the Findings

The ratios depicting the relationship between the growth in the numbers of central office administrative staff and the growth in the numbers of schools, pupils, teachers, teachers plus principals, and total professional staff indicate very little change from 1944 to 1967. Subsequent to 1967, however, the central office administrative staff has grown at a faster rate than the various measures of district size mentioned above. When compared to the growth in the numbers of total central office staff, the central office administrative staff has become proportionally smaller over the past twenty-five years.

Ratios were also calculated showing the relationship between the growth in numbers of the various subdivisions of the central office administrative staff and the growth of the whole district. The trend has been for both the central office senior and supervisory administrative staff to become increasingly smaller in relation to the growth of the entire school district. Both the higher level administrators (superintendent, deputy superintendent, associate superintendents, assistant superintendents, and secretary-treasurer), and those involved in instructional administration (supervisors, assistant supervisors, and coordinators), have become proportionally smaller parts of

the whole district over the past twenty-five years. The ratios comparing the growth in the central office intermediate and service administration to the growth of the entire EPSD indicate very little consistency of pattern from 1944 to 1967. Both sets of ratios have, however, shown an overall increase subsequent to 1967.

The total administrative ratios were calculated by comparing the growth in the numbers of central office administrative staff plus principals to the growth in the numbers of various measures of district size. From 1944 to 1948 most ratios showing the growth of the administrative component increased sharply. These first few years tend to support the findings of the Terrien and Mills (1955) study. These ratios became increasingly smaller from 1948 to 1966. This proportional decrease in administrators tends to support the findings of Gill (1967), Blowers (1969), and Vithayathil (1969). From 1966 to 1969 most administrative ratios have increased once again. The numbers of administrators in the district have also increased proportionally from 1964 to 1969 when compared to the growth in the numbers of schools. Prior to 1964 no consistent pattern in these ratios was observable. The administrative component of the EPSD has had a cyclic development in relation to the growth of the entire district.

Over the past twenty-five years, the central office auxiliary staff has grown consistently in relation to all measures of district size. This component was subdivided

into two categories, those concerned primarily with pupils and those concerned primarily with teachers. When compared to various measures of district growth, both of these subdivisions showed comparative increases.

The central office support staff, which consists of all those performing clerical, secretarial, or custodial functions, has increased substantially in relation to the various measures of growth of the whole district over the past twenty-five years.

The growth in the numbers of total central office staff has also been greater than the growth in numbers of the various measures of district size.

Conclusions and Implications

The ratios presented in Chapter 4 indicate a general increase in the three major components of the central office staff (COAd, COAx, and COS) when compared to the growth of most measures of district size. Taken as a single unit, the numbers of total central office staff have also increased at a faster rate than most measures of the EPSD itself. Schools over the past twenty-five years have taken on a much wider and more diverse range of functions. Greater concern with the learning problems encountered by many pupils have prompted the district to hire psychologists and remedial specialists. Employment of social workers by the school district reflects a broadening of educational functions by the EPSD. Campbell et al. (1965:239) have suggested that "if schools take on more diverse functions . . . we think

that schools will become more complex by way of organization." They suggest there will be fewer school districts of a larger size. These authors conclude that as a result of this increased consolidation ". . . central office staffs will, on the average, be larger than they are now; . . ." It seems inevitable that as the district grows and becomes responsible for a greater range of educational functions its central office staff will become larger and more complex.

This question of complexity is one which bears a close relationship to organizational growth and the growth of organizational components. Campbell et al. (1965:239) state that ". . . complexity may be, in part, a function of size." The widening range of functions performed by the EPSD as well as its increasing size have been responsible for the district's growing complexity at the central office level. Blau and Scott (1962:227) when referring to the Terrien and Mills (1955) findings that larger school systems supported larger administrative staffs, pointed out that "this complexity, not size itself, may have been responsible for their larger administrative staffs." By applying such an explanation to this longitudinal study, one might hypothesize that administrative and central office expansion took place as a result of increased complexity rather than as a result of increased size. The growing complexity which has been very much in evidence in the district's central office staff within recent years, tends to suggest that an even greater comparative expansion of the central office administrative, auxiliary,

and support staffs will take place in the EPSD in the immediate future. The Edmonton Public School Board has recently approved plans for a more decentralized expansion of some non-teaching personnel.

As indicated earlier, the administrative component (central office administrative staff plus principals) of the district has shown certain periods of comparative increase as well as certain periods of comparative decrease in relation to the growth of the entire district. From 1944 to 1948 there was a definite increase in most ratios showing the growth of the administrative component. These ratios declined steadily from 1948 to 1966. A sharp increase in the proportion of the district's employees who were administrators is reflected in the ratios from 1966 to 1969. These administrative ratios indicate that the growth of the administrative component in relation to the growth of the whole school district has passed through various cycles.

A number of authors (Carzo and Yanouzas, 1967:500; Argyris, 1965:117) have suggested that an organization will tend towards stability. Litterer (1965:403) insists that increased size of an organization will lead to increased complexity in order to maintain optimum efficiency. It may be that when an organization reaches a certain size it requires a greater proportion of administrators in order to maintain an acceptable level of stability and efficiency. Once this level has been reached the organization may be able to sustain it without proportionally increasing its

administration. Even though the organization continues to grow the proportion of administrators may remain the same or become smaller. Eventually organizational growth may once again result in a situation in which the internal stability and efficiency are threatened. The natural reaction may be to once again increase the proportion of administrators. Many other factors may affect the length and range of each cycle. The availability of funds, the current trends in education, and the rate of growth of the educational organization are three factors which will influence the pattern of the cycles.

A recognition of this administrative growth cycle may allow the district to better prepare for its future requirements insofar as human and material resources are concerned.

Recommendations for Future Studies

If a number of large urban school districts were similarly analysed through longitudinal studies of this sort, the findings could be compiled and subsequently more generalized conclusions could be drawn. The addition of longitudinal data to the existing cross-sectional data should help in the creation of a more complete description of organizational growth and development.

Both cross-sectional and longitudinal studies in Ontario, Quebec, and the Atlantic Provinces would be useful in this area of educational research. Many educational organizations in Central and Eastern Canada are much older

than any educational organizations in Western Canada and thus would be valuable for longitudinal studies in this area of organizational growth.

A thorough descriptive study of how reorganizations and amalgamations affect the growth of a school district would prove beneficial in this area of educational research. Probably a fuller understanding of organizational development would result from a detailed examination of the administrative reorganizations of a large school district and the effect these changes have on other components. Administrative succession in a large school district could also be examined in terms of its effect on system growth.

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